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The Anne MacKenzie Oration.[1]

THE CONQUEST OF CLIMATE.

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ANNE MACKENZIE, whose distinguished son has chosen to perpetuate her memory by means of an annual lay oration—which it is this year my privilege and honour to deliver—was born in 1843 in Sutherlandshire, in the extreme north of the Highlands of Scotland. She came to Australia as a child and spent much of the remainder of her life at Kilmore, where she was widely known for her efforts in the closely related causes of education and philanthropy. In 1906, at the age of sixty-three, she died in Melbourne.

Born of a family devoted to education, she realized how essential to national advancement are simple factors: appropriate home surroundings, suitable and sufficient diet, education adapted to the social and industrial emphasis of the times, and freedom from vitiating diseases; in other words, how the progress of the race depends upon the establishment and the maintenance of a beneficent accord—an equilibrium—between man and his constantly changing environment.

Naturally enough, it is Sir Colin MacKenzie's expressed wish that each oration should outline recent progress made in diminishing some of the varied disease risks that threaten mankind; that it should seek to familiarize the public with some new trend in medical and scientific thought; and that, to some extent, it should indicate the practical application of our new knowledge; that is to say, the methods we should adopt for the corresponding improvement of national efficiency.

The task would be easy if human progress were continuous, but the scattered gleanings of one epoch

[1] Delivered at the Institute of Anatomy, Canberra, on March 1, 1933.

are too often separated from those of the next by fallow periods of chaos and regression; indeed, as Karl Sudhoff aptly said:

> Even the very memory of a pathway broken into the Land of Promise is often obliterated, and what seemed accomplished fact has had to be re-created by laborious work covering years, decades, and even centuries.

Not only is progress in knowledge spasmodic, but it is uneven, so that, side by side with great advances, we are amazed to find a common acceptance of primitive theories that hark back to those ancient times when man, naked in his ignorance, feared that he was the mere sport of a million menacing supernatural forces. One of the most curious of these common beliefs is the idea that climate rules the destinies of nations and the mental and physical moulds of men with a sort of brutal determinism: that man, in short, is the mere creature of his meteorological environment.

A century ago no one dreamed of doubting it; and today, though science has exposed its hollowness, this dictum of obsolete schools is still a commonplace with the man in the street. (Even the more conservative of the better educated seem to cling desperately to the hope that that hypothesis, sanctified by ancient authority, may not have succumbed entirely to the impact of fact.)

Actual examples will indicate better what I mean. In 1843, the year of Anne MacKenzie's birth, Willem Bosch was preparing a publication that contained this statement of the accepted beliefs of his time:

> We are absolutely certain about the accuracy of our hypothesis: that to mankind is given a particular place by the Lord of Creation, which is his Native Land, where all things are so placed as to suit him particularly, and thus preserve the race. He cannot trespass the length and breadth of this boundary without great damage to his health and danger to life.

In 1906, the year of Anne MacKenzie's death, opinions on the "inexorable" nature of climate had so utterly changed that Australia, confident of her ability to colonize her tropical north, could deport in that year the last few Kanakas, whose fellows for half a century had been demonstrating in the sugar fields of Queensland their extravagant inefficiency as labour machines, and their deadly facility for transmitting malaria, filariasis, hookworm disease, and leprosy.

To trace the origin of the extraordinary theories that are still common regarding what is loosely called "climate", we must go back to those dim days of antiquity to which I referred, when fear, bred of ignorance, produced in its turn that mystical obsession which has been both a spur and a fetter to the development of exact knowledge.

In the intellectual hey-day of Egypt, before the barbarian conquest, in the ancient Greece of the days of Hippocrates and his successors, and during the last two hundred years of our own era, humanity almost escaped its bondage. But the love of the mysterious is like a wind that blows unceasingly over the ocean of human credulity, raising waves that fret unceasingly at the base of the beacon of knowledge.

The interest that one finds today in so-called occult phenomena, the readiness with which people will accept as possible the story of any incident that appears to defy the established laws of science, the gratitude with which the man in the street would receive even so obviously absurd a suggestion as that his bunion was due to the conjunction of the planets Saturn and Mercury, rather than alter the shape of his shoe, indicate how close to the surface is our passion for the answer that relieves us of personal responsibility.

From the dawn of time to our own day, in a slowly declining sequence, it has been readily accepted that whatever was unexplained was supernatural. It was considered that the malice of demons, the justice and severity of saints, or a presumed "putrefaction of the atmosphere" produced pestilences; and that human witchcraft was equally effective in individual cases; that amulets, charms, words of power, and sympathetic magic were of the greatest potency; and that the sun, the moon, the stars, the earth, the air, the very winds and waters were animated and sentient bodies of the greatest power for human weal or woe. To those who believed these things, obviously one's geographical position on the earth in relation to the planets, governed not only climate, but one's individual health, as well as the destinies of nations.

Time does not permit me to do more than demonstrate my meaning by several quotations. Garrison or Newsholme will supply the interested with dozens of others.

Origen (A.D. 184-254) and Saint Augustine (A.D. 353-430) both stated it as their opinion that "it is demons which produce famine, corruption of the air, and pestilence", a belief expressed by hundreds of scholars and divines, including Martin Luther in the sixteenth century, and not entirely extinct today.

The Venerable Bede, in his "Ecclesiastical History", states that Bishop Wilfrid, in A.D. 656, being called to attend a sick girl, was thoroughly annoyed with the abbess in charge for having had the girl bled on the fourth day of the moon, stating that bleeding, when the light of the moon and the tide of the ocean were both increasing, was not only unskilful, but indiscreet to the point of danger. Shakespeare, a thousand years later, voiced a similar belief.

Chaucer wrote in his description of the perfect physician:

> Wel coude hee gesse the ascending of the star
> Wherein his patientes fortunes settled were,

while almost up to the present day, no "book of hours", no almanac, no calendar was complete without its marvel of illumination or its coarse woodcut, showing precisely which part of the body, or what emotion, was governed by each sign of the zodiac, and emphasizing the favourable planetary conjunctions for war, love, or other adventures.

So much for the influence of the planets on health. In the "Travels of John de Maundevil" we have a typical example of the way planetary influence was

invoked to justify preconceived opinions as to national excellence, character *et cetera*. The writer says:

> And in eche one of those is great plentie of cities and muche people. For men of Inde are of that condicion that they passe not oute of theyr lande commonly, for they dwel under a planet that is called Saturne & that planet maketh his course by the XII signes in XXX yeare; and the Mone passeth through the XII signes in a moneth; and for that Saturne is of so late sterying[1] therefore men that dwel under him & in that clymate have no good will to be muche sterying aboute. And in our countrey is it contrary, for we are in a clymate that is of the Mone & of lyght sterying,[2] and that is the planet of way [navigation], and therefore it giveth us will to muche moving and sterying, and to go into diverse countreys of the world, for it goeth aboute the world more lyghtly than any other planet doth.

Two centuries ago science began again to lend her lustre to those arts and crafts for human welfare which had been stultified by the speculative sophistry of the schools, and to draw man up from this welter of absurdities. But the way has been long and hard, for even the keenest of intellects were hampered by the false authority of the scientific dicta of earlier epochs.

The great Sydenham, who, perhaps more than any other, was responsible for initiating medical reform in England, was led in this way into the false belief that the widely varying types of "fever" were the same thing modified only by different atmospheric and climatic conditions; indeed, he thought that these gave rise to their epidemic spread. He confessed that he could only regard acute (epidemic) diseases as "coming from God" and as being due to a "secret and inexplicable alteration of the air infecting men's bodies"; while, in discussing certain epidemic occurrences, he gave it as his opinion that "the constitution of the air being not so inclinable to produce the Bloody-Flux, gave occasion to the Smallpox".

In some form or other medicine repeated his errors until 1870!

Recall for a moment the opinions of two centuries ago on tropical diseases:

Elephantiasis (mycetoma ?) of the leg, said Schouten, "is caused by the damp climate of the country, the cold nights, and over-indulgence in the cooling fruits which grow in Malabar"; and he finds himself unable to agree with those who said that "all those thus afflicted are descendants of that tribe who tortured the holy Saint Thomas in India".

Scurvy is said by Bogaert, in an excellent clinical description of the disease, to be caused by "the dry and enervating sea air and salt food, combined with too little drinking water, and often an astringent cold on account of which the moisture in the stomach and the glands suffers from an oppression of the mucous secretions, and turns sourer from day to day".

In 1753 (only thirty-five years before Sydney was settled), a commission of five Dutch physicians (Stier, Schroeder, Soual, Rasche and Pierson), reporting on the cause of malaria, stated:

> To look for the cause of this miserable state of health in the deplorable Fall of the first couple is going too far, and even if it were found there, little could be done to remedy such an ancient evil; we leave this alone and point out in the first place that the sphere of vapour or atmosphere being polluted with many corrosive emanations from filthy mudholes, dead bodies, carrion, and other things that cause bad odours, has the power to coagulate and turn acid the blood and fluids in the human body.

The diseases reputed to arise from "bad odours" resulting from organic decay were paralleled by many derived from the so-called "mephitic vapours" from the "bowels of the earth", which even included dengue, described by David Beylon in 1778 as arising from "the sharp moisture and the too frequently changing atmosphere, and everything that prevents the separation and the free flow of the perspiration".

The belief that perspiration was "healthy" seemed to be confirmed, our fathers thought, by the frequent fatal cases of heat exhaustion in India and elsewhere, in which cessation of sweating is the danger signal. In practice, however, it led to that abuse of alcohol which is one of the chief handicaps of white residents in tropical lands.

A century ago, Dr. Currie, an authority on tropical diseases and conditions (who, naturally enough, had never been in the tropics!), made this pronouncement:

> Europeans who go to the West Indies are more healthy in proportion as they perspire freely, especially if they support the discharge by a moderate use of gently stimulating liquors, *stopping short of intoxication*.

So popular a thesis seemed to bear the stamp of genius, and every tropical practitioner since has had some variant of it quoted at him by that large section of his patients who, as a much keener observer remarked, are bent upon "digging their graves with their teeth and washing themselves into them with alcohol".

To promote perspiration and yet to avoid the hypothetical dangers of "open pores", the sojourner in the tropics was urged to swathe himself in warm clothing—preferably flannel—a fertile source of the very heat exhaustion he sought to avoid; he was advised also to promote and applaud the appearance of prickly heat, which was considered to insure good health, this being an absurd reversal of the fact that rashes occasionally fade just before death, with the failure of the circulation, producing that "striking in" of the eruption held in such dread by slum mothers whose children were suffering from scarlet fever or measles complicated by bronchopneumonia.

The newcomer was also cautioned to avoid every fruit and green growing in the tropics, and though this had a basis in fact, in so far as acute bowel infections were concerned, its modern equivalent is the ludicrous notion that whatever tropical fruit is locally plentiful is harmful. Bananas are asserted to cause bowel parasites and "low fever", pawpaws to produce malaria; and many an Australian in New Guinea languishes on the mummified contents of tins and packages while his backyard is littered with, actually, hundredweights of native fruits and

[1] Of such sluggish motion.
[2] Of rapid movement.

vegetables ideal for the preservation of health and for varying his stale and monotonous diet.

Among the scientific, the "air", the "climate", "meteorological conditions", "mephitic vapours", "divine wrath", and the galaxy of defences built up to conceal ignorance or incompetence are no longer invoked, but, as I mentioned previously, the man in the street, unaware as yet of any change, cherishes all the catchwords.

He believes that the world is divided by rigid lines of latitude into hot, cold and temperate regions; that various races of men are adapted only to particular geographic settings; that the white man degenerates as he approaches the equator; that heat and cold rule character and govern the destiny of races; that skin colour is a sure guide to intellect; and, most emphatically, that the land of his forefathers was, is, and always will be the ideal and unique source for the production of ideal men and the original repository of civilization and culture.

It is all very natural of course: six thousand years of history show this national belief in national superiority has been a universal delusion.

To the people of ancient Mesopotamia the inhabited world was no more than the one great triune continent of Europe-Asia-Africa, that spread out on three sides down the long slopes of the earth from Akkad, the centre of their culture, until it met that all-embracing tropic ocean which was said to flow around Earth's utter verge. High above Akkad heaven had its zenith, for could not even the most untutored, gazing into that infinite blue, see that there its mighty vault reached the summit of its glory? And was not Akkad the centre of the world's trade, power and civilization, and obviously, therefore, the favoured seat of the Supreme God?

Akkad and its civilization passed utterly away, but in spite of its fate and that of every one of its successors, no nation since that has ever attained to empire, or aspired to it, has escaped the belief that there was some particular constituent in its climate that made it mankind's ideal and its population God's chosen.

The fall of the mighty empires of Asia Minor, two thousand five hundred years ago, seemed to Aristotle only to confirm the ideal excellence of the climate of Athens. The Asiatics, he reflected, are artistic and versatile, but deficient in courage; our own forefathers in North Europe he considered almost over-courageous and tenacious of liberty, but so wanting in understanding of the arts that they were unskilled in politics and had no ability to govern either themselves or their neighbours. Greece, on the other hand, he maintained, was set midway between these barbaric extremes and thus was obviously the ideal and capable of dominating the whole world. (No Greek thought of it, indeed, as ever doing less than that.)

Hippocrates, the Father of Medicine, from a known world that was actually smaller than Australia, was entirely of the same opinion, and had set down very exactly the climates, areas, elevations, winds, degrees of sun, and so forth, that had produced the Greek ideal, and all the less fortunate types of man. Colloquial ideas of climatic influence still slavishly follow his dicta (except in so far as they regard the Greek as man's ideal).

Greece fell before Rome—"Eternal Rome"—the very hub and geographic centre of the world to her inhabitants, who were sure, too, with the sanguine conviction of the patriotic, that there at last was the ideal race in its ideal setting. Vergil, it will be remembered, from the social pinnacle of Rome's grandeur, mourned the hopelessness of the fate of Britain, cut off in her savagery from civilization for ever, as he laments, by the rough waters of the English Channel and the North Sea.

In the middle ages the Venetians, the heirs of the fallen Roman Empire of the west, considered that the fact that Venice lay in the forty-fifth degree of latitude, half way between the equator and the north pole, was an almost blatant indication of the perpetual imperial destiny to which she and her people were called.

Bodin, the Frenchman, in 1580, was persuaded that France was the centre of world prudence, and gave climatic reasons for it; and, finally, we have Sir John Herschel, who gravely announced: "London is the centre of the terrene globe".

Emerson quoted with amusement this ingenuous tendency to find that that country which has been fortunate enough to be one's own birthplace, or the source of one's chief interests, has special ideal characteristics, and added slyly:

> I have seen a kratometric chart designed to show that the city of Philadelphia was in the same thermic belt, and, by inference, in the same belt of empire as the cities of Athens, Rome, and London. It was drawn by a patriotic Philadelphian and was examined with pleasure, under his showing, by the inhabitants of Chestnut Street (Philadelphia). But when carried to Charlestown, to New Orleans, and to Boston, it somehow failed to convince the ingenious scholars of all those capitals.

I dare not mention Ellsworth Huntington and Lothrop Stoddart in our own day.

Patriotism aside, of course, there was always someone to whom the ephemeral nature of national greatness was obvious; someone who realized how essential to progress were economic circumstances and health factors, who realized, in short, that advancement is entirely a matter of maintained accord between man and his environment.

Thus Thucydides, speaking of ancient Athens and her greatness, mentioned a vital factor when he said:

> The richest and most fertile soils were always most subject to change of master; the goodness of the land favoured aggrandisement by particular individuals, and these created faction, which is a fertile source of ruin, while it also invited invasion.

Bodin, though he idealized France, had a clear idea of the insufficiency and arbitrariness of a rigorous geographical determinism, knowing, as we all know, that different successive races in the same climate can have the most diverse histories, and that the same people in the same country may pass, the physical conditions never altering, through alternate periods of power and servitude, leadership

and decadence; knowing, indeed, how largely "food, laws and customs have the power to transform Nature". How else should the haughty soldiers of the victorious armies of the Pharaohs have produced only the Coptic fellaheen that we have seen plunging and sweating like labouring bullocks in the mud of the Nile?

Man's real ability to bear any extreme of temperature, altitude, rainfall *et cetera*, though often denied, is demonstrated by everyday experience. Lucien Lefèbvre, in the delightful work to which I am indebted for many of my examples, in developing the theme that man deliberately sets Nature at defiance, says:

> Can we talk of heat and cold—sheer heat and sheer cold, so to speak? Geographies generally agree to place the "pole of cold" at Verkhoyansk in Siberia; and it is a fact that of the three poles of cold which Mohn recognizes in the northern hemisphere, in his account of the meteorological results of Nansen's Polar Expedition (Eastern Siberia, Central Greenland, and the Polar Region properly so called), Siberia is the chief and the most accentuated. But Verkhoyansk, which is included in it, is an inhabited place, with a population of 356, according to the latest census, and the soil there is sown and cultivated every year: indeed, human families live and multiply there under conditions which are elsewhere considered prohibitive, for the January mean is −51·2 degrees. Inversely, Massowah on the Red Sea, in the middle of a stifling coastal plain, combines all the extreme conditions of heat which our meteorological treatises define, and is, notwithstanding, regularly inhabited (population 7,000). . . . . Another series of meteorological phenomena has to be considered: the restrictive action of the barometric pressure is well known and evident. Men can work but little, and that with difficulty, under too low a pressure, but this did not prevent the making of a railway in Peru at a height of 13,000 feet; nor the working of sulphur mines on Popacatepetl, at 17,800 feet. A road has been made at a height of 18,500 feet in the Karakorum; and, lastly, 17 per cent. of all the towns in Bolivia are situated at a height of over 13,000 feet. In southern Thibet mountain sickness is felt by travellers, at times very seriously, at an altitude of 12,000 to 15,000 feet; but Shigatse is a town 12,740 feet high, and Gyangtse stands at 13,000 feet, where a July temperature of 105 degrees has been recorded, whilst from September onward it freezes, and night temperatures of −16 degrees are frequent and even normal in winter.

Woeikof points out that half the human race (806 millions) lives between the twentieth and the fortieth degrees of north latitude, that is to say, in that very belt of land so often condemned, which is nearer the equator than any part of Europe whatever, and contains, moreover, the greater part of all the deserts in the northern hemisphere. The areas classed as "desert" or "semi-desert", that is to say, those that receive less than twenty inches of rain in the year, actually form altogether three-fifths of all the land above sea level. And they are by no means negligible countries (a matter of immense importance to Australia, since a great part of our own area comes under that category); it was precisely in those desert and semi-desert areas that there arose, without exception, the ancient civilizations, both of the old and the new world.

Time does not permit me to refer in any detail to those great chapters in the mighty story of civilization, and I regret it, because our education persistently ignores them, to concentrate upon the age of Pericles, from which we draw our civilization, as though its splendour blotted out the equal grandeur of its predecessors.

To us, the Golden Age of Greece, as the source and origin of our own intellectual ascendancy, is the beginning of civilization; as a matter of fact, it was the end product of all the mighty civilizations that had gone before it, not a few of which had transcended it, including that ancient Egypt that could declare to Solon that the Greeks, in their heyday, were "mere children, loud-mouthed and vain, with no knowledge of the past"; including the civilization of India; and including those great empires that had repeatedly arisen in Asia Minor.

From time immemorial the Chinese were famous navigators. It is said that as early as A.D. 121 they had invented the compass and sailed the seas from the Persian Gulf to Canton, and from the Malay Peninsula to Australia, New Guinea, and the Philippines, in great junks capable of holding six to seven hundred men, so that the greatest part of the known world looked to China as "Mistress of the Seas". (Some months ago, many feet beneath the surface of a newly discovered gold mine in New Guinea, Australian miners were amazed to find a Chinese bell, one of the trade symbols of their age-long search for pearls and gold. At Port Darwin years ago, excavations for road building in virgin country revealed a Chinese plaque several feet beneath the roots of an enormous banyan, itself a foreign tree.)

Reaching the zenith of her civilization before ours even began, China declined as a world power after the revolution of A.D. 878, when the foreign merchants were massacred or expelled (was it because they brought epidemic plagues in their ships?) and Chinese voyagers were rigorously restricted to the neighbouring shores. It was not until the thirteenth century that the Mongol invasion once more dragged her from her self-sought isolation into the great maelstrom of world commerce.

As for India, Mookerji points out that:

> For three centuries India stood out as the very heart of the Old World and maintained her position as one of the foremost maritime countries. She had colonies in Pegu, in Cambodia, in Java, in Sumatra, in Borneo, and even in the countries of the further east, such as Japan. She had trading settlements in South China, in the Malayan Peninsula, in Arabia, and in all the chief cities of Persia, and all over the east coast of Africa. . . . During the first few centuries of the Christian era an enthusiastic band of devoted Bengalis, burning with a proselytizing zeal, went so far as China, Korea, and Japan, carrying with them the torch of Buddhistic faith.

Her influence and dominions spread right through the Indonesian chain above our shores, where Chinese had preceded them and Arabs were to follow (and where, indeed, in the Torres Straits, by some dim chance, Egyptians had left the detailed processes of mummification as used in Egypt in the twenty-first dynasty, to be the burial practice of a savage native tribe on Darnley Island).

The Hindus excelled all the nations of antiquity in operative surgery, and four hundred years before Christ they had highly developed medical and

sanitary systems and public hospitals. Malaria was known and attributed to mosquitoes, a discovery re-made by Ross less than forty years ago; the recently recognized association of rats with plague was observed and recorded; and several other diseases of recent investigation, as, for example, diabetes, were, we are told by Garrison and Jolly, recognized and dealt with. Their methods of operating for cataract, skin grafting, and certain other procedures were adopted into present day European medicine, and they have provided us with numerous effective drugs for our pharmacopœia.

Apart from these civilizations, we often forget that there is no direct descent between ancient Greece and modern Europe.

When a debased form of Christianity destroyed knowledge in Europe, it was Asia that became the heir of ancient teaching. It was not until the Arabs from the deserts of Asia Minor burst through the Dardanelles that the learning that had stagnated for a thousand years broke into belated flower. The amazing rise of Europe was to that epoch what the rise of Japan has been to this.

But meanwhile, for a period as long as that during which Great Britain has been a world power, and considerably longer than that during which the United States of America has been in existence, the burning sands of Asia Minor and Africa bred a race of warriors, scientists and missionaries equal to any later series.

The religion of Mohammed aimed at the conquest of the world, and in less than a century it had actually conquered the world from the Atlantic to the Himalayas and, we are told, but for the sudden death of a caliph, would probably have extended its sway to the Pacific. As Beazley says:

> The last of the Ommiades (A.D. 750) reigned over three-quarters of the empire of Alexander and a quarter of the dominion of Trajan . . . No race has ever shown a greater keenness for the acquisition of knowledge or more favour to the growth of science.

Arnold Wood has added that:

> While Europe sat in darkness, Baghdad became the centre of a splendid civilization.

In the ninth century the Greek and Roman classics had already been translated into Arabic and had become the inspiration of native Arab scientists, who in their turn, though not until four hundred years later, became the teachers and masters of Christian scholars like Roger Bacon.

Arabian travellers cooperated with Arabian men of science and surveyed every sea from Spain to China, from Cairo to Madagascar, from Java to Canton. Arabian merchants traded and colonized on the east coast of Africa, on the west coast of India, in Sumatra, in Java, and in China. Immediately north of Australia's shores is a little island, west of the Philippines, in the Pelew group, which in its Arabic name of Bab-el-thaob, or "Gateway of the East", demonstrates the far-flung limits of the Moslem power. Well might Sir William Hunter write that "the Indian Ocean became an outlying domain of Islam".

When one turns unbiased attention to these other civilizations which now seem so remote — and perhaps in their remoteness and in our ignorance somewhat trivial—it is difficult, but essential, to realize that it is only six hundred years since the Europe of today began to rise from the chaos of semi-civilization; that it is less than three hundred years since England became a first class power; and that at that golden age of Greek dominance from which we trace the very phrases, ideas and habits of thought that mould so much of our public policy, and colour so much of our national outlook, Britain, and indeed all north-west Europe, was primitive to the stage of sordid misery.

The climate has not changed in this tiny section of history. To regard it as the causative factor in Great Britain's rise to power is obviously ludicrous.

To what, then, is due the present eminence of the Anglo-Saxon race, British and American, with its colonies and dominions in every continent?

Every human factor is complex, but to this question we must answer in all humility that one very large element at least was the rounding of the Cape of Good Hope by Vasco da Gama, a Portuguese, and the discovery of America by Columbus, an Italian sailor in the service of Spain.

British history may be said to have begun when those discoveries produced the maritime revolution that closed the middle ages, the revolution that transferred the centre of world politics from the Mediterranean to the Atlantic, effectively and finally checkmating the Mediterranean nations which had monopolized trade with the East through that land-locked sea, and the Moslem, who, by his possession of Asia Minor, had cut the whole of Europe off from the Indian Ocean. Britain, as isolated as Australia, became suddenly the ideal seat and centre for the Atlantic trade, and in one century (and without, mark you, any change of climate) sprang from obscurity to the status of a first class power.

With trade came wealth, with wealth came food, and with food, health.

There is a whimsical parallel and contrast between ancient Britain and the Australia of 1788, as we know them from contemporary authors.

Australia, we were assured, was one of the poorest of countries, isolated "for ever" from centres of trade, with no natural fruits, with no animals but the dingo and the kangaroo, with a summer climate that was intolerable, and with a vegetation that was no more than a vast monotony of grey-green gums, interspersed with dreary swamps and miles of drab scrub; above all, said the critics, was a fierce sun in a brazen sky, with blinding sunlight and a parched soil never moistened by rain.

The Britain of two thousand years ago was utterly unlike the ideal Britain of our tradition or the man-made gem of today. It was, as Vergil said, isolated "for ever" from civilization by rough seas; it had no fruits but the bitter and uneatable crab apple, and no animals but the wolf. It had great areas of dreary swamp and fen, and a winter

climate that the hardy Roman soldiers dreaded worse than death. As for the vegetation, throughout all Europe it was no more than a dreadful monotony of beech, elm, chestnut and oak, that from the northern slopes of the Alps to Ultima Thule buried the country beneath a grey-green pall, rendered ever more melancholy by the lowering skies, the utter sunlessness and the perpetual dripping of the endless rains that soaked its sour soil.

And what of it today?

As Emerson says:

> England is a garden. Under an ash-coloured sky the fields have been combed and rolled till they appear to have been finished with a pencil instead of a plough. The solidity of the structures that compose the towns speaks the industry of ages. Nothing is left as it was made. Rivers, hills, valleys, the sea itself, feel the hand of a master. The long habitation of a powerful and industrious race has turned every rood of land to its best use, has found all the capabilities, the arable soil, the quarriable rock, the highways, the byways, the fords, the navigable waters; and the new arts of intercourse meet you everywhere; so that England is a huge phalanstery where all that man wants is provided within the precinct.

What wrought this change in what had been that age-old monotony of beech and oak: Nature, or man setting Nature at defiance?

The story of the human will and human industry that have extended the vegetation of the tropics and the semi-tropics to redeem the colder reaches of the earth from their barren bleakness, is the main theme of civilization.

The ancient Pharaohs took advantage of their foreign expeditions to introduce exotic plants into Egypt, and were so well aware of the glory due to men who bettered or outwitted Nature that they took to themselves for so doing titles of honour, that we still may read inscribed on their ancient monuments.

By systematic and studied acclimatization they collected within their country from Western Asia an enormous quantity of plants for food, for industry, and for pleasure, and distributed them, moreover, to all their allies and neighbours. Upon the naturally rugged coasts of a Mediterranean we have never known they grafted that artificial landscape we regard as "typical of Southern Europe". Can you imagine an Italy bare of the olive, the vine, the oleander, the cypress, the plane tree, the lemon, the orange, the almond, the peach and the mulberry? Yet so it was until Egypt remade it. To all these the Romans added from their conquests the apricot and the pomegranate, among a host of lesser fruits and flowers, and from Italy they carried their fruits to enrich and remodel all Western Europe as far as the Rhine and the Danube, grafting fragments of a new kind of country—a new kind of climate—on natural areas whose disparity with them was complete. In its new French homes, for example (and in spite of the prophecies inspired by that pessimistic conservatism that seems inseparable then, as now, from the academic-minded), the vine flourished so exceedingly everywhere that in the middle ages a canton of Toulon-sur-Arroux "took its name (Sanvignes) from its almost unique incapacity to nourish that plant of hot climates". (Lefèbvre).

The olive similarly, foreign to both Italy and Africa until two centuries after the foundation of Rome, had been naturalized there so successfully that it became the commonest of fruits and now was carried "with painful care into Spain and Gaul" (Gibbon).

Flax, too, was transported to Gaul from Egypt, and enriched the whole country; and the use of artificial grasses, including in particular lucerne (which came originally from Media in Asia Minor) became a familiar boon to European farmers.

In Britain, however, up to the end of the middle ages, the process was rudimentary and famine always followed a bad harvest. During the winter there was not enough pasture for the flocks, and it was the custom to kill and salt, smoke or dry the flesh of all but the best beasts. Even so, the people's ration was so meagre that scurvy was appallingly rife. The introduction of new fruits, vegetables and fodders from abroad—the most permanent of the "fruits of conquest"—came with the maritime revolution and England's consequent rise to world power. To the curious student her importations set her former poverty in high relief. Plimmer points out, for example, that the use of greens and salads was introduced only by Catherine of Aragon, wife of Henry VIII, and that, as the English were ignorant of the growing of greens, she was forced to import a gardener from Holland, where possibly the people had learned the art while subject to Spain.

The potato, so important a factor in our everyday life, was brought to England from its home in the dry Andes of South America in 1565 (and incidentally was regarded at the outset with indignant hostility as "unchristian" pig food); while the planting of root crops, such as the turnip, dates only from the middle of the seventeenth century.

Custom turns a casual corner and civilizations rise or fall.

Osborne, commenting on the decline of Rome, once pointed out that no description of the causes that bore down that mightiest of empires was complete if it omitted "Baltic herring and Egyptian wheat". No history of the rise of Great Britain is perfect if it omit the introduction of the foods that permitted her flocks and herds to be carried safely through the winter and added to the diet of her people those elements that foster vigour and initiative. For three thousand years the potent British stocks lay latent in an obscure island; in three hundred they overran the whole globe.

When, less than a century ago, the microscope conquered superstition, science found the Anglo-Saxon in every climate clinging grimly to half the world. The coloured races of the tropical lands laid luxurious tributes at the feet of their new lords, and the diseases rife in their new dominions struck them down in thousands as they took them up.

In the West Indies, for example, three thousand white men died in one small island in one year; and in Africa and in India the record was no less dreadful. It is recorded that a King's ship, *Tiger*, cruising on duty off the Barbadoes, out of a crew of originally 220, lost 600 men from yellow fever in two years, the master of the vessel, as he reported, "still pressing men out of merchant ships that come in, to recruit my number in the room of those who died daily".

The lot of the soldier in India makes startling reading. Statistics are out of place perhaps in a lay oration, but you will permit me a moment's latitude to take you back a century. From 1832 to 1838, inclusive, in Fort William, India, out of every thousand soldiers there were 1,883 admissions to hospital every year, and the annual deaths were 73. At Chinsurah depôt, twelve miles from Calcutta, from 1826 to 1837, of every thousand of the troops there were 1,930 admissions to hospital, with 73·7 deaths annually. That was the mortality on the spot only, and does not include the invalids who died on the passage to England or shortly after their arrival there; these were sufficient to bring the deaths to more than eighty per thousand annually. As service in India was permanent, or, rather, leave of absence was allowed to those who chose to return to Europe for three years after ten to fifteen years of service, it will be noted that in the tenth year less than two hundred would survive out of every thousand soldiers sent to India.

And what were the diseases? They were diseases that at the present day are almost wholly preventible. Out of every thousand soldiers dying in Bengal Burke stated that two hundred and sixty-eight died from "fever", 378 died from bowel complaints and liver abscesses, 195 died from cholera, 46 died from tuberculosis or other respiratory diseases, leaving a meagre total of 110 in every thousand to die from every other kind of disease whatever.

I have already referred briefly to the fact that as recently as the girlhood of Anne MacKenzie it was commonly accepted that the causes of epidemic fevers and diseases were either cosmic, atmospheric influences, or miasms from "the bowels of the earth"; that the localization of particular forms of disease was supposed to be due to "local peculiarities" of men and climates; and that, as William Stokes (1804-1878), following Sydenham, asserted, diseases were not specific and separate, but that "the same exciting cause is capable of producing different kinds of fevers in different persons".

Since no distinction was known between fevers, except the mere fact of locality, all were treated alike, and the death rate was enormous. The treatment was directed towards expelling the supposed evil matter, and was as follows: first, repeated bleeding, twenty-five to fifty ounces of blood being withdrawn (and many a patient was bled to death, as is obvious from the case notes); secondly, violent purgation; thirdly, cold and tepid affusions; fourthly, mercury, pressed to the point of poisoning and the production of salivation; fifthly, violent emetics were used to reinforce the effects of violent purges (though this was passing out of favour); and sixthly, diaphoretics were used to "sweat the poison from the body", to use the present day phrase of the man in the street. In the last stage of treatment tonics and stimulants, including quinine bark, wine and opium, might be employed.

The only drug valuable in malaria—and malaria must have represented a very great proportion of all the cases—is mentioned in one word on one page in an account of the treatment of fevers that traverses nine pages of close print. It is not otherwise referred to, except in condemnation, in Johnson and Martin's standard text book of 1841, though Johnson states that, on account of the variability in symptoms seen, he "shall not attempt to deny that there may be cases wherein the use of wine, and even bark (quinine) is indispensable".

Into this tragic confusion came the microscope, a magic index of bacteria and parasites, that steadily and rapidly dispersed that comfortable smoke screen of ignorance, "climate", replacing it by clear pictures of visible causes.

As early as 1546 Fracastorius, a famous Italian doctor, had, so Garrison tells us, described contagion as being due to *"seminaria contagionum"*—germs—that were able to grow and multiply; and had quite clearly expounded the relation between infection and epidemics. Nevertheless, it was only between 1870 and 1900 that a series of brilliant successes decided the struggle between science and the speculative philosophy that had usurped the throne of scientific observation.

In 1872 Lewis in India discovered that the microfilaria lived normally in the blood of persons infected with filariasis and the fever that accompanied it; in 1873 Obermeier saw first the spirochæte that is the essential cause of relapsing fever; and in 1874 Hansen demonstrated the bacillus of leprosy. In 1878 Manson, the "Father of Tropical Medicine", found that a mosquito, an insect vector, was the indispensable carrier that conveyed filariasis from man to man. He had effected a revolution in medical thought.

From 1880 to 1894 there were determined among other things the causative organisms of suppuration, typhoid fever (1880), malaria (1880), glanders (1882), tuberculosis (1882), cholera (1883), diphtheria (1883-4), tetanus (1884), undulant (Malta) fever (1887), cerebro-spinal meningitis (1887), and plague (1894); and man, running hotfoot in the sudden consciousness of victory, soon discovered how to outwit Nature by protective inoculation against anthrax, tetanus, hydrophobia, cholera, diphtheria, and typhoid.

Three years later (1897), Shiga and Kruse had detected the germ cause of bacillary dysentery, and Tictin had found that relapsing fever was conveyed by the bed bug, the louse and the tick being incriminated also later. But in that year (1897-8) Ronald Ross, on Manson's advice, and with his

encouragement, finally demonstrated the rôle of the mosquito in the transmission of malaria, and for the first time laid down the measures that would ultimately vanquish that "principal and gigantic ally of barbarism".

The microscope revealed and classified ever-increasing numbers of parasites from the blood, the body tissues, the urine, and the bowel contents; while in the laboratories scientists grew on culture media the "demons that produced corruption of the air and pestilences" and bottled in test tubes the different organisms whose varying effects on the human body had been ascribed to "differences due to climate".

Thus, in the short span of thirty years, climate was absolved from the burden of guilt it had borne unjustly for thirty long centuries.

In the tropics the effect of this new lead in scientific thought was enormous. With the development of national greatness social standards had so improved in Great Britain during the previous two hundred years that the commoner epidemic plagues had largely disappeared: leprosy had gone with the middle ages, plague disappeared after 1680, malaria was increasingly rare, and cholera only an occasional dreaded visitant. But among the teeming poor of the rich and populous East, the most fatal plagues were still so common that, forgetting Europe's former subjection to these same scourges, they were called "tropical diseases". I must emphasize that point.

Many diseases called "tropical" are merely diseases which have their greatest distribution where social and sanitary conditions are primitive, or grossly defective, and nowhere is this the case more than in the tropics. Plague, cholera, typhus, smallpox, dysentery, leprosy and malaria have all raged at times in Europe and were only recently controlled, some foci still existing. It was in the tropics, however, that they were rampant, and it is to the tropics that we look for those victories to which each year adds new examples.

Moreover, as Manson long ago pointed out, heat and moisture are responsible for an amazing fertility in tropical countries—in men, in animals, and in plants; and this applies equally to bacteria, parasites and the insects that act as their vectors. Since the fly, the tick, the mite, and their more scandalous colleagues, the flea, the bed bug, and the louse, have been found equally guilty with the mosquito as porters of disease, it is obvious that in the areas of their greatest prevalence, and earth's greatest profusion, man must fight this grimmest battle for survival.

Before Hercules may win the golden apples of the Hesperides and the delights of Olympus, he still must overcome the fiery dragon that guards the tree, and the many-headed Lernean hydra of the swamp.

Here, perhaps, we may spare a crumb to the protagonists of climate and set it in its true perspective; for here, perhaps, is that grain of fact in a bushel of fiction that led the world in its ignorance to set all diseases at its door. Newsholme points out that:

> In England mild winters and cool summers lower the death rate, the former by decreasing catarrhal infections, and the latter especially by reducing the prevalence of diarrhœa. Hot and dry summers favour the occurrence not only of fatal diarrhœa in the summer, but also of enteric fever in the autumn of the same year. But recent experience shows that hygienic measures are competent to reduce or even to annihilate any excess of these diseases favoured by climatic conditions. Typhus fever and smallpox prevail chiefly in the winter and spring; but they are completely avoidable at all seasons. Pneumonia is much more prevalent and fatal after a cold snap accompanied by fog; and this has been ascribed to the absence of sunshine; the chief agent in causing this result, however, is the low temperature, affecting in particular those of extremes of age, with lowered vitality. Differences of prevalence of disease associated with climatic differences are well known, as, for instance, in rheumatic fever, scarlet fever, diphtheria, and tuberculosis; but in most instances—and still more is this true for the tropical parasitic diseases—the difference is controllable.

Newsholme might have added that the warmth and moisture of the tropics are essential to the presence of the hookworm—that great devitalizing factor in native (and even white) communities—a disease that is the only present threat to white colonization in tropical Queensland (where, up to the withdrawal of the Commonwealth last year from the campaign for control, it had already cost the country £180,000).

Cholera in India has been found by Rogers to be able to reach epidemic proportions only when the degree of atmospheric humidity has reached a certain figure; yellow fever in Central America requires for its development in epidemic form a mean atmospheric temperature of 75° F., and will not spread below it. It is favoured by damp and stopped by cold. Martin and Bacot, in India, demonstrated that the duration of life of *X. cheopis* when fasting was determined by saturation deficiency, and Rogers recently called attention to the fact that a low saturation deficiency meant a high incidence of plague and a high saturation deficiency a low incidence. On all such information forecasts of epidemic probability can be made in these and in other diseases, for investigators, with patience and skill, have determined an infinite number of other minute differences in the life histories of parasites and their insect vectors, upon which, to an extent undreamt of, depend the effective implantation, the endemicity, or the epidemic spread of various diseases.

This, then, is the new trend of medical and scientific thought that I present to you. How can we best apply it?

Newsholme answered the query when he said that there is always some controllable aspect of the case; in the tropics this is not only true, but it is the basic problem of progress.

Unless the administrations of tropical countries make health everything, disease makes them nothing.

Time permits me only the briefest illustrations. Nicholls has shown how surely the former civilization of Ceylon that spread its magnificent monuments from that island throughout the Indonesian

chain above our shores, was destroyed a thousand years ago by the malaria and the hookworm disease that still flourish triumphantly among their ruins; Jones has demonstrated the rôle of malaria in the fall of Greece and of Rome; the history of India is one long catalogue of such disasters; and in the earlier days of south and central America the white man was repeatedly pushed from his supremacy by yellow fever. Every kind of explanation has been advanced by armchair speculation to account for the patchy distribution of the Polynesian and Melanesian races here in Oceania—skin colour, climate, ocean currents, and a dozen others—but it is perfectly obvious that it is the absence or presence of malaria that has determined the local survival or extinction of the Polynesian.

I have chosen Indonesia and Oceania as examples because the factors operative may be studied in the island chains that bound our shores from Java to Fiji, and because one example is the story of the ruin of a great civilization and the other is largely the explanation of the barren history of New Guinea.

In the great Melanesian chain, in a climate that will grow in profusion almost every tropical product, we are amazed to find primitive and undeveloped tribes on whose shores the successive waves of eastern and western civilizations have spent themselves in vain since the dawn of history. Perhaps nowhere is there a better illustration today of the blind brutality with which disease factors and food deficiencies together chain man down to mere animal existence.

The reference to food deficiencies recalls the recent triumphs in the field of dietetics.

Just as the outstanding achievement of last generation was the isolation of the specific bacteria that caused epidemic disease, so the research in this generation that has most seized the attention of the public is the discovery of the unsuspectedly intimate association that exists between food and health. No one now doubts the relation of scurvy, beri beri, and rickets to the lack of some essential constituents in the diet, or denies the existence of the substances called vitamins. But researches into nutrition have demonstrated, even more importantly, that, apart from the prevention of frank disease, a balanced and adequate diet is essential to the vitality of mankind, with all that that implies in fertility, resistance, manliness, energy and initiative.

Thus McCollum and Simmonds assert with conviction that, short of producing obvious disease, an improperly constituted diet is an important cause of:

> Inferiority in physical development, instability of the nervous system, lack of recuperative power and endurance, with consequent cumulative fatigue; and lack of resistance to infections such as tuberculosis, and other types where specific immunity is not easily developed by the body. In addition to these, the rate of development of senile characteristics and consequently the length of the span of life are greatly influenced by the type of diet to which one adheres.

In New Guinea these hypotheses are amply confirmed not only so far as the natives are concerned, but also among those white men who live on tinned foods. Food deficiencies double all hospital costs; and, indeed, all overhead expenses, by enormously diminishing the efficiency of labour.

How could it be otherwise with the natives at least, whose diet in their own villages, even at its best, is bulky, innutritious and deficient in fat and in protein, hard to digest with its 15% to 50% of contained fibre, and poor in vitamins *A* and *C*? At its best its deficiencies are made up for the more powerful members of the tribe by the growing shoots of plants, certain seedy grasses, ferns and fruits, with the raw liver of fish, or, rarely, of animals, formerly even of men. At its worst it is a compromise with famine, and not always a successful one.

With endemic diseases that prevent all but a minimal foraging for food or cultivation of the soil, and with a consequently faulty diet that still further lowers bodily resistance to those very diseases, is it any wonder that the native often reaches a stalemate, where initiative and industry are lost in the mere struggle for survival?

Nor does the coming of the white man aid him at the outset. The first impact of civilization is actually to intensify native disabilities, for in New Guinea it introduced tuberculosis, dysentery and venereal disease; while disruption of the social organization of native communities and the introduction of plant pests still further limited foodstuffs. Nevertheless, if we will use them, we can today lay the whole world under tribute to redress the balance, for both the diseases and the deficiencies are controllable, though admittedly control is a complex problem.

It is the conquest of environment, and is not this what I called just now the main theme of civilisation? Should not, is not, the whole fabric of social progress built about the cooperation of the producer, the defender, and the equitable distributor of work and wealth, or, as one may more aptly put it for a subject native province threatened with disease and famine, the cooperation of the medical man, the agriculturist and the anthropologist?

The basic problem in every native community is the problem of health, and medical science has won many victories since Manson, Ross, Reed, Bruce, Rogers, and a host of others brought promise out of chaos. One can do no more than mention the progress that has been made in the control of malaria, hookworm disease, smallpox, plague, cholera, dysentery, relapsing fever, typhus, leprosy and a host of others. Schistosomiasis yields to the antimony treatment elaborated by Christopherson, while the work of Leiper and others has shown that the parasite develops in water snails vulnerable to attack. Kala azar, which often decimated the richer populated tracts of Bengal and Assam, killing 90% of those it attacked, has in the last few years succumbed also to the curative properties of intravenously administered antimony. There is the

greatest promise in the success that has been secured in the treatment of sprue by lessons learned in the special field of endocrinology. Cholera and plague may now be rapidly stayed by prophylactic vaccines, while the epidemic distribution of the former may be anticipated with certainty and prevented by adequate measures; and rat control and examination are a sound check on the latter. Emetin and other products have enormously reduced the ravages of amœbic dysentery, while synthetic chemistry continually adds to the resources available to the physician in the treatment of almost every tropical disorder.

In the field of plant life the endless story of beneficent interchange between the tropical and the temperate regions goes on unceasingly.

I have referred previously to the part Egypt played in remoulding the countries of the Mediterranean from the rich plant life of western Asia; to the dissemination throughout all Europe of those benefits by the Roman conquests; and to the continual additions that have varied life, ameliorated hardship, and multiplied resources since the great tropical areas of the old and new worlds were thrown open by explorers and traders.

In the last three hundred years, and especially in the last century, our dependence upon the tropics has grown to an enormous extent—an extent that is masked by long everyday familiarity. We draw on the tropics for such common articles as our indispensable beverages, tea, coffee and cocoa; the coconut oil that produces many of our soaps, the tung oil that blends the paints of our houses, and all kinds of fibres of industrial importance, such as sisal-hemp, cotton, silk, jute, kapok, and so on. From the tropics we have obtained hundreds of medicinal drugs, spices, aromatics and dyes, as, to give the first examples that occur to me, quinine, castor oil, ipecacuanha, quassia, strophanthus, ephedrine, chrysarobin, chaulmoogra oil, and camphor; sugar, pepper, nutmeg, cloves, cinnamon, cochineal, coconut and curry powder. The veneer woods of the tropics are general in our homes, and fruits such as bananas, pineapples and dates are common on our tables; sago, tapioca and rice are universal, while rubber, both raw and vulcanized, has infinite uses, from pavements to palates.

Moreover, many tropical products have been successfully adapted to actual growth in temperate climates, and, apart from the potato, include melons, beans, sweet potatoes, ginger, tobacco, rice *et cetera*, besides oils, nuts, gums and fibres in great variety.

From the enormous resources of the tropics the mechanical ability and initiative of progressive races are daily adding new comforts and resources to civilization, besides improving the product itself. Immediately above our shores the Dutch in Java have cultivated cinchona to such excellence that they have transplanted quinine production from the Andes to the East Indies; and in like manner rubber growing has been taken from the Amazon to the Orient, while Java produces a better palm oil than Africa does.

I select these examples because they occur in the great Indonesian chain with which our tropical possessions are continuous.

In Australia, beginning from the other end of the scale, we have queerly reversed the process of adaptation. The tenacity of our explorers and pioneers gave us a heritage stretching from the equator through more than 40 degrees of latitude (a heritage extended last month to the South Pole itself), and the conservatism we inherited no less from our European ancestors harnessed it to the task of growing English products in the English way for the English-speaking markets. Indeed, holding as an article of faith the idea that white men cannot live in the tropics, Australia, paradoxically, has not only successfully implanted her people for several generations in a tropical and subtropical land, but has coerced it into the semblance of the homelands from which we have come. We have taken a country that, climatically speaking, is everywhere utterly different from the British Isles and that, with the exception of the tiniest moiety of south Victoria, is everywhere closer to the equator than any part of Europe whatever, and in those areas that preeminently owe their allegiance to the tropics we have produced in increasing profusion the fruits and products of temperate and even cold lands.

Man once again has demonstrated, as Lefèbvre claims, that:

> Humanity escapes more and more from blind determinism, from the mechanical causality of his environment. Man is more and more the master of Nature and would be still more so did he utilize better the resources he has created, and had he a less vacillating idea of civilization.

In that struggle for progress which, I repeat, is preeminently the establishment of a beneficent accord between man and his constantly changing environment, human will is the dominating factor, and nowhere perhaps is this more important than in the Australia of this and the next generation.

We claim exclusively a semi-tropical and tropical continent, originally free from endemic disease; we have the suzerainty in New Guinea of a native dependency that can be to Australia what the Dutch East Indies have been to Holland; we stand perhaps on the threshold of events as revolutionary as those that transferred the seat of world interest from the Mediterranean to the Atlantic, for events are every day more clearly demonstrating the increasing importance in world politics of the Pacific. The conquest of tropical disease has placed in our hands the key of our destiny, and we may well take stock of our responsibilities and our resources.

Lawrence Lowell said some years ago:

> It is hardly an exaggeration to summarize the history of four hundred years by saying that the leading idea of a conquering nation in relation to the conquered was, in 1600, to change their religion; in 1700, to change their trade; in 1800, to change their laws; and in 1900, to change their drainage. May we not say that on the prow

of the conquering ship in those four centuries first stood the priest, then the merchant, then the lawyer, and finally the physician?

It is true, but there is a greater lesson: in that greatest of all the problems that confront Australia—the demonstration to the world that we are capable of developing successfully the greatest remaining accessible tropical area, and of bringing the scattered tribes of Melanesia out of their wilderness of famine and disease into the security of settled government and productive life—we require the intimate cooperation of all four, though, truly, with the recognition of the fact that, in tropical lands, health is the foundation upon which every other developmental activity must rest.

In Australia we have a greater population, purely white, living in the tropics than any other country in the world can boast, and these white men and women of the second and third generations live there without any loss of mentality, physique or fertility. It is the demonstration to the world (admittedly largely an unconscious experiment, successful owing to the absence of any teeming native population riddled with disease, but, nevertheless, an outstanding demonstration) that the conquest of climate is primarily, essentially, the conquest of disease.

That once achieved, we may say, as Shelley sings:

> All things now are void of terror: Man has lost
> His desolating privilege, and stands
> An equal amongst equals. Happiness
> And science dawn, though late, upon the earth;
> Peace cheers the mind, health renovates the frame;
> Disease and pleasure cease to mingle here;
> Reason and passion cease to combat there;
> While Mind, unfettered, o'er the earth extends
> Its all-subduing energies, and wields
> The sceptre of a vast dominion there!
>
> (SHELLEY, "Daemon of the World", lines 458-467.)

A NOTE ON THE USE OF STEAM FOR PROVIDING SUCTION.

By G. V. DOYLE, M.D., M.R.C.P., B.Sc.,
St. Arnaud, Victoria.

THE poor water supply in this town of St. Arnaud led to the use of an "Electrolux" vacuum cleaner for supplying suction powerful enough for surgical purposes. This in turn has been put aside for an apparatus worked by a steam ejector.

This has provided suction with the following advantages. Its power is independent of the height of the building wherein it is used. Thus for operating theatres placed in the upper storeys of a hospital it is ideal.

The power developed depends on the steam pressure. In this hospital the pressure of thirty pounds to the square inch provides enormous suction power. With steam pressure of fifteen pounds little diminution of power is noted. It can be regulated by the simple turning of a steam tap from a gentle pull to that required to empty a bladder of blood clot without the slightest difficulty.

The power is sufficient to allow the surgeon and the anæsthetist to use suction at the same time. This saves the incessant mopping necessary in some circumstances. The ease with which the anæsthetist can keep the airway clear has to be seen to be appreciated.

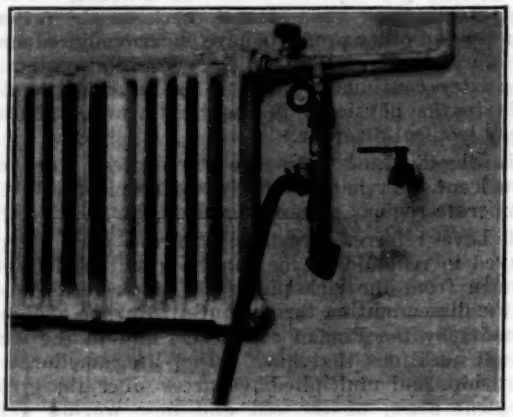


FIGURE I.
Showing the ejector fitted to steam pipe with control tap and non-return valve. The ejector pipe is seen piercing the wall.

It is practically noiseless and costs almost nothing to use. Careful check by the engineer over a period of months has shown the cost of operation to be almost nil.

The ejector can be bought at any hardware store and is attached to any part of the steam supply. The exhaust is led through the wall in the usual manner. Blow-back is prevented by a non-return steam valve placed in the suction line. The valve

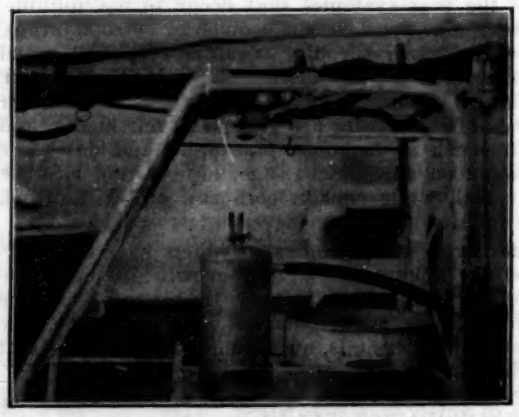


FIGURE II.
Showing the tank under table with the hose going to the ejector and the two inlet pipes.

is connected by garden hosing to a receptacle, which we have placed under the operating table. This could, of course, be anywhere in the theatre to suit the surgeon. The tank has two inlets, each controlled by taps, permitting one or both to be used.

The cost of purchase and installation in our case, including ejector, hosing and tank, amounted to about four pounds. It is a convenient standby for hospitals using electric power for suction, as, once installed, it costs nothing and is always ready for use.

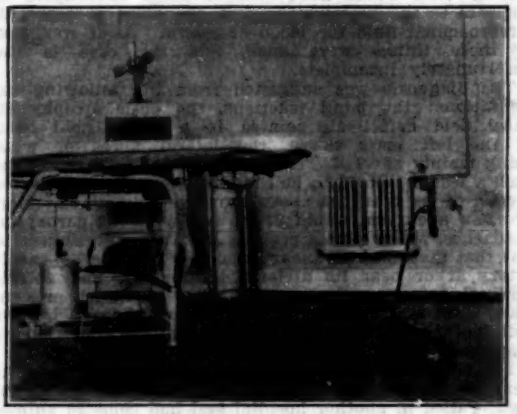


Figure III.
Showing the general lay-out of the apparatus.

Its disadvantage is that steam pressure is necessary. Photographs illustrating the apparatus are supplied and will explain themselves.

A NOTE ON THE VACCINE TREATMENT OF PNEUMONIA.

By Vernon Davies, M.D. (Melbourne),
Honorary Physician, Wangaratta District Hospital, Wangaratta, Victoria.

Although pulmonary infections may occur at any season, in this district they are usually most frequent in the last four months of the year. This is probably a little later than is common in Melbourne, and is possibly accounted for by the spread of infection to country dwellers who visit the Melbourne Royal Agricultural Show in September. Every year one can predict with confidence that many of those who journey to the metropolis at this time will return with some catarrhal or influenzal infection. When the value of prophylaxis is more generally appreciated, no doubt our patients will recognize that inoculation against the common respiratory germs is well worth the small expense and inconvenience.

Last year the epidemic of "influenza" which occurred here from September onwards showed a distinct tendency to attack the bronchi, and in a considerable number of cases bronchopneumonia supervened. Interspersed with these were also cases of lobar pneumonia. Altogether twenty-five patients were under my care in whom pneumonia of one or other type was diagnosed. The ages of these patients ranged from one year to eighty-two years. All were treated with vaccine except three, who were not seen for the first time until they had probably been suffering from pneumonia for more than four days.

Wynn[1] points out that the chief obstacle to the use of vaccines has been the fear of a negative phase, but that as the patient is not sensitized during the first few days of the illness, a large dose of vaccine can safely be given.

In the present series of cases pneumococcus vaccine (mixed), B strength (Commonwealth Serum Laboratories) was used. This contains 125 million *Micrococcus catarrhalis*, 250 million pneumococci, and 50 million streptococci to one cubic centimetre. The dosage used in each adult case was 0·42 mil (seven minims) of this preparation. In children a dose proportional to the age was used, reckoning the adult dose as containing 100 million pneumococci. The injections were all given subcutaneously. The dose was repeated in twenty-four hours if there was not a fall in the temperature of the patient and if the disease had not reached its fifth day.

No harmful effects were observed in any case.

In one man of seventy-five years of age the injection was given on the fourth day, which was the first day he came under treatment. The following morning he complained of having had a restless night on account of headache, but his general condition had much improved.

Another patient who had been ill for nine days was admitted with bronchopneumonia. Vaccine was given once in this case because she said her cough had become worse three days before admission, and it was thought that the pneumonic condition had dated from then. The day following the vaccine injection her temperature rose from 38·9° to 40° C. (102° to 104° F.). Later she gave a positive reaction to the Widal test and showed the clinical signs of typhoid fever, but the lungs cleared up earlier than is usual in such cases.

In no other case was anything pointing to a reaction to the vaccine observed.

Wynn,[2] in another article, states that pneumonia should be looked on as an acute emergency, demanding the same promptness of treatment that surgeons give to acute abdominal conditions. He emphasizes the importance of immediate vaccine treatment in all forms of pneumonia. He uses a preparation containing 100 million each of pneumococci, streptococci and influenza bacilli. This he repeats every twenty-four hours till the temperature falls. He points to a series of 180 patients treated during the first three days with a mortality of only 5%.

Of the twenty-two patients whom I treated with vaccine, eight received their injection on the first day. Four of these had normal temperatures within twenty-four hours, and all of the eight had temperatures below 37·8° C. (100° F.) within thirty-six hours, with no subsequent rise. There was at the same time a corresponding improvement in both the general condition and the lung signs.

In all the other cases, that is, those receiving treatment between the second and the fourth day of the illness, there was some sign of improvement following the vaccine, and all patients' illnesses ran a mild and uncomplicated course to recovery.

In all these patients the pneumonia was either the primary disease or was secondary to influenza and bronchitis, except in the case of typhoid fever

mentioned above. The twenty-two patients, however, include a variety of types, such as a baby of one year with double lobar pneumonia, a woman of fifty-five who had had asthma for twenty years, a man of seventy-six with glycosuria, and a woman of eighty-two who is almost bedridden.

It is, of course, well known that the virulence of the organisms which cause pneumonia varies greatly from year to year. Consequently a vaccine that gave good results in one epidemic might possibly not be so effective in another. The other important point is the diagnosis, which would have to be confirmed in a large number of cases before the treatment could be absolutely assessed.

The object of this note is to draw attention to the two articles by Wynn, and to report that in a small series of cases the claims he makes for the vaccine treatment of pneumonia are confirmed.

References.

(1) W. H. Wynn: "Influenzal Pneumonia: Modern Technique in Treatment", *The Lancet*, Volume III, page 307.
(2) W. H. Wynn: "Pneumonia", "The Medical Annual", 1932, page 365.

Reports of Cases.

A CASE OF INTRACRANIAL ANEURYSM WITH OCULAR SIGNS.[1]

By G. H. Barham Black, M.B., B.S. (Adelaide), D.O.M.S. (London),
Honorary Assistant Ophthalmic Surgeon, Adelaide Children's Hospital.

This case is, I think, worthy of publication, in the first place because intracranial aneurysms with definite ocular signs are rare, and secondly because a provisional diagnosis was made before any known rupture had taken place and two months before death occurred.

The patient, R.B., a healthy looking man of forty years, was seen and examined on May 18, 1931, and again in the out-patient department of the Bristol Eye Hospital on May 20, 1931. These examinations were necessarily brief, but the following information was obtained. He had noticed "dazzle" before the left eye during the previous November and progressive loss of sight in the left eye since that date. He also suffered from severe headaches, which came on every night soon after going to bed and lasted two or three hours. The pain was confined to the left side, beginning in the occiput and gradually advancing towards the brow. He was still following his employment—motor driving.

Vision in the right eye on May 20, 1931, was $^6/_6$ and in the left eye $^6/_{18}$ (partly). The right pupil reacted normally to light and accommodation; the left, larger than the right, did not react directly to light, but reacted well consensually and to accommodation.

Ophthalmoscopically the right eye was normal; the left exhibited well marked optic atrophy of the primary type, and, as Mr. Cyril Walker pointed out, the retinal arteries were, if anything, rather smaller in the left eye than in the right.

There was no affection of other cranial nerves, and Dr. Hugh Carleton, who had examined him previously, stated that there were no other neurological signs.

The right visual field was normal; the left exhibited a gross nasal defect, which, as the chart shows, was very suggestive of glaucoma. In this connexion, however, the Schiotz tonometer readings were: right, 15 millimetres; left, 18 millimetres.

The man left the out-patient department without any definite diagnosis having been made, but was told to report again in a week for further investigation. Unfortunately, he did not return and was not seen again by me. As my presumptive diagnosis of aneurysm was made two or three days later, after reviewing the features of the case, a further visit would have enabled us to investigate the response to the Wassermann test, the blood pressure, the cerebro-spinal fluid for blood *et cetera*. As it was, none of these things were done, and the case is thus unfortunately incomplete.

The diagnosis was suggested from the following considerations: the pupil reactions, the optic atrophy and nasal field defect all pointed to a prechiasmal lesion of the left optic nerve, the lateral fibres of which being mainly affected. The only structure likely to cause such a lesion seemed to be the left internal carotid artery or one of its branches above the cavernous sinus. Moreover, an aneurysm would fit in well with the paroxysmal headaches, which were a prominent feature. My suggestion was that there was an aneurysm of the left internal carotid artery at or near its division into middle and anterior cerebral arteries, causing the lesion by direct pressure. This view was not correct, as autopsy showed, but was sufficiently near the truth to claim that the condition was diagnosed.

I have not been able to trace the man's history for the next two months and only by good fortune discovered that he had died in another hospital and had come to autopsy. By the courtesy of the pathologist of the hospital I have been allowed to examine the brain, which, fortunately, had been preserved.

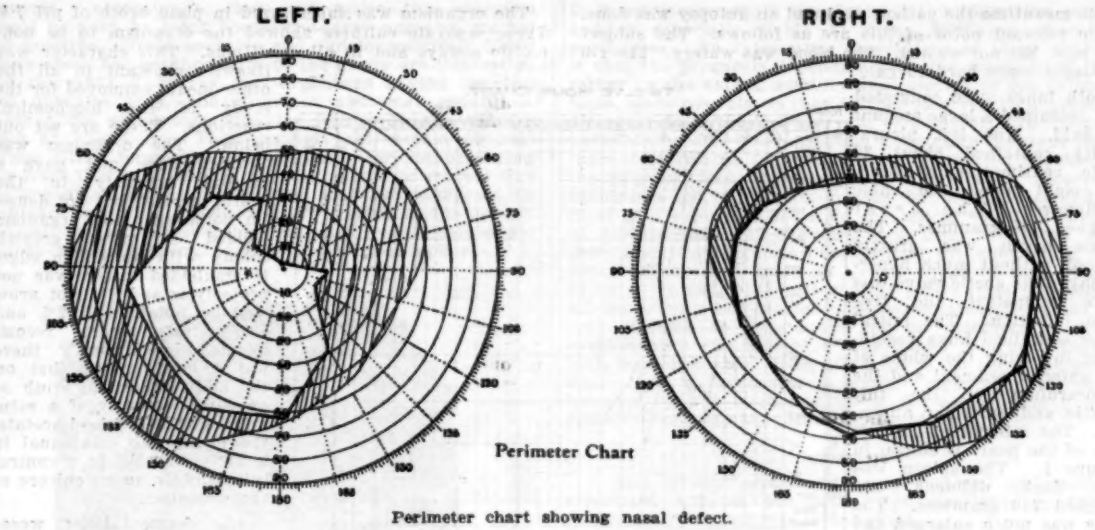
The brain had been divided sagittally, the section deviating slightly to the left side, and a certain amount of damage to structures had occurred. Owing to this and extensive subarachnoid hæmorrhage, difficulty was found in identifying the anatomical relations.

The subarachnoid hæmorrhage extended from the base and involved most of the convexity of both cerebral hemispheres, but not the cerebellum; it was much more extensive at the base of the brain and in the interfrontal longitudinal fissure. Occupying the prechiasmal space was an aneurysm, measuring twenty millimetres anteroposteriorly and 13 millimetres vertically, the left wall of which had been severed and was missing, together with the left optic nerve. Owing to the asymmetry of the sagittal section, the whole chiasma remained attached to the right side of the brain. The junction of the right anterior cerebral with the anterior communicating artery was blended with the upper wall of the aneurysm at its anterior part but no visible opening into the sac from these or any other vessel could be detected, nor was any rupture to be found. Possibly the hæmorrhage occurred, not from the aneurysm itself, but from a perforating branch being ruptured by traction of the aneurysm on the circle of Willis. Both lateral ventricles were distended, but no blood clot was present in them when I saw the specimen.

The question arises of the manner in which such an aneurysm caused a left nasal hemianopia. From its situation one would have expected a bitemporal hemianopia. My explanation is that as the aneurysm enlarged, it pressed backwards against the chiasma, and by the attachment of its forepart to the anterior cerebral arteries (the right being directly joined and the left through the anterior communicating artery) drew these structures forward till eventually they were stretched as a tight cord round the lateral border of the optic nerves, which would thus be constricted between the artery and the fundus of the sac. The artery being harder and narrower, the first damage to the visual fibres would originate from it, that is, the lateral fibres, and hence a nasal field defect would result. That the left nerve was affected, and not the right, must be accounted fortuitous, due to variation in the lengths of the two arteries.

Unfortunately the left optic nerve was missing, so that the presence or absence of grooving from pressure of the artery could not be demonstrated, and the explanation suggested above must remain a theory only.

[1] Read at a meeting of the Section of Clinical Medicine of the South Australian Branch of the British Medical Association on August 17, 1932.



Perimeter chart showing nasal defect.

This case is, I think, most unusual, in that it gave localizing signs which rendered a diagnosis possible within small limits, though it must be admitted that the *modus operandi* of the optic atrophy was not suggested, my belief being that the pressure must be direct from an aneurysm situated lateral to the nerve. Had the aneurysm produced the signs which, from its anatomical position, one would have expected, namely, bitemporal hemianopia, it is almost certain that a diagnosis of pituitary disease would have been made. I must admit, therefore, that the diagnosis of aneurysm was a very lucky one, based as it was on conclusions which in one respect were false.

I think, however, that the diagnosis was justified on the findings, in that there was definite evidence of pressure on the left optic nerve, and this, in combination with paroxysmal headaches, which came on with a recumbent posture, made the diagnosis of aneurysm highly probable.

Taking a wider view, the lesson which this case teaches seems to be that in any case of optic atrophy of unknown origin, intracranial aneurysm should be considered as a possibility, for in this case though monocular hemianopia did occur, almost any other field defect might have resulted, terminating in double optic atrophy and complete blindness if the patient had survived long enough.

Acknowledgement.

I am greatly indebted to Mr. Cyril Walker and Dr. Hugh Carleton for their kindness in allowing me to publish this case.

SEPTICÆMIA AND ACUTE INFECTIVE ENDOCARDITIS DUE TO BACTERIUM COLI.

By J. V. DUHIG, M.B.,

Director, Brisbane and District Laboratory, Hospital for Sick Children, Brisbane.

THE history of the patient is as follows.

Mrs. F.E.A., twenty-five years of age, married, and engaged in ordinary domestic duties, was admitted to the Brisbane Hospital on September 13, 1932, complaining of vomiting for three or four days. She had one healthy child six months old. She had suffered from pyelitis during her pregnancy, in December, 1931. She also had had "kidney" trouble three years ago. She gave no history of rheumatic fever. She had been comparatively well until one week ago, but ever since the birth of the baby she has had attacks of shivers lasting half an hour or so. About a week ago there was a gradual onset of cough with blood-stained sputum. She did not go to bed until September 12, 1932. Her friends have noticed that she has been growing paler.

Examination revealed a very pale, sick, dyspnœic patient with a rapid pulse. The conjunctivæ were pale and the colour is recorded as *"café au lait"*. There was definite pulsation of the jugular vein. The pulse was rapid, regular and of moderate tension. The apex beat was in the fifth space, ten centimetres (four inches) from the mid-line. There was a definite systolic murmur at the mitral area and an indefinite systolic murmur at the aortic area. The lungs revealed an occasional râle. The spleen was not palpable. A provisional diagnosis of subacute bacterial endocarditis was made, and sedatives, digitalis and collosal manganese were ordered. The same day, the patient's condition was observed to be very distressed; she had marked tachycardia and was reported to be dangerously ill. On September 15, two days after admission, there were crepitations at the base of the right lung, tenderness in the right hypochondrium and an increase in the liver dulness. She is recorded as having "disproportionate dyspnœa". On September 16 there was a friction rub at the right base and the spleen was palpable. On September 17 she was moribund and died early in the morning of September 18. Collosal manganese seems to have had no effect. The chart of the temperature and pulse is shown.

Ward tests of the urine revealed albumin on two occasions and pus once, on September 15.

A blood count made on September 14 gave the following result:

Red cells, per cubic millimetre	3,980,000
Hæmoglobin value	50%
Colour index	0·6
Leucocytes, per cubic millimetre	29,800
Neutrophile cells	91%
Lymphocytes	9%

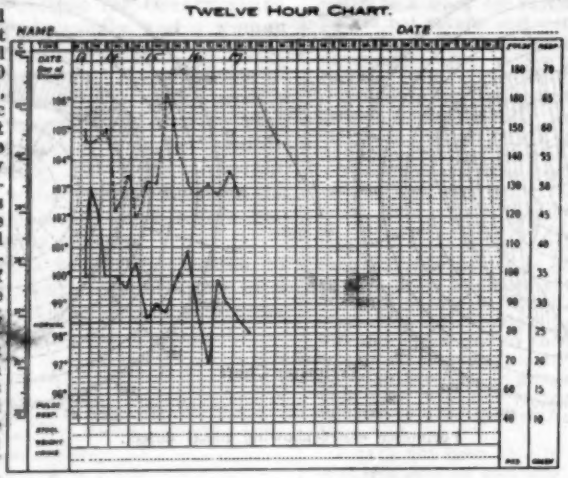
The red cells showed anisocytosis, poikilocytosis, polychromasia and vacuolation. A few normoblasts were found. The platelets were normal. On September 16 the blood contained 80 milligrammes of urea *per centum*. A blood culture revealed on September 17 a Gram-negative, non-motile bacillus, fermenting lactose with acid and gas, glucose with acid and gas, but producing no immediate change in saccharose and dulcite. This apparently anomalous organism was reserved for further study, and

in the meantime the patient died and an autopsy was done.

The relevant notes of this are as follows. The subject was pale, but not wasted. The blood was watery. The rib cartilages were hard to cut.

Both lungs were congested and contained a large amount of fluid. The left pleural cavity contained about 30 cubic centimetres of fluid, the right about 300 cubic centimetres. The heart weighed 495 grammes. The whole organ was greatly dilated, without much hypertrophy. The aortic valve was quite competent and free from infection. The mitral valve contained huge vegetations involving the whole of the anterior segment and the endocardium of the left auricle and auricular appendix. The interior of the left side of the heart is shown in Figure I. The spleen was soft, dark, diffluent, and weighed 250 grammes. The liver was much enlarged and showed typical "nutmeg" change. The left kidney weighed 230 grammes, the right 215 grammes. The pelvis of the left kidney was full of pus, that of the right was acutely inflamed. The left suprarenal body was three times normal size, the right normal.

Twelve Hour Chart.



Temperature Chart.
The broken line represents the pulse, the continuous line the temperature.

Cultures made from the spleen and vegetations on the mitral valve in plain broth yielded in twenty-four hours a non-motile, Gram-negative bacillus identical with that isolated from the blood before death. The biochemical characters of this organism will be discussed later.

The photomicrograph (Figure II) shows a section of the vegetations on the mitral valve. There is the usual abundant cellular inflammatory exudate in the tissues of the valve, the edge of which is sharply demarcated from the vegetation. The field in the picture is quite typical of the whole section and shows a valve free from all anterior injury. That is to say that the implantation of the organisms on the segment was a somewhat accidental sequel to the already existing septicæmia, a not uncommon course of events in cases of bacterial endocarditis. Beyond the valve margin in the picture is seen a pale clot of fibrin and within this a very dark mass of organisms, which on examination by oil immersion objective are found to be small, stout, Gram-negative bacillary forms exclusively and uniformly.

Figure I.
Heart, showing vegetations on the mitral valve.

The organism was subcultured in plain broth of pH 7·4. Three separate cultures showed the organism to be non-motile always and in all conditions. This character was likewise constant in all the other media employed for the study of the biochemical reactions. These are set out below. The organism was Gram-negative and gave a general turbidity in the broth, marked, but not dense. On solid agar the organism yielded a moist greyish colony with an entire edge. It emulsified easily, was not proteolytic and did not grow well on potato. In 2% and 5% citrate broth recommended by Brown,[1] there was a good growth, but on the addition to the broth of an equal quantity of a saturated solution of lead acetate, the precipitate was equal in quantity to that in a control tube containing no culture of the organism.

The fermentations were: acid and gas were produced in lactose, but slowly in comparison with the usual rapidity of the common type of lactose fermenter; it took well over twenty-four hours for the changes to occur. Acid and gas were also produced in glucose, maltose, lævulose, mannite, sorbite and iso-dulcite. Acid and gas were produced in dulcate, but only after four days. Saccharose, inulin, and inosite were not affected. With salicin, in forty-eight hours there was feeble production of acid and gas. The organism produced indole, was methyl red positive and Voges-Proskauer negative. Methylene blue was reduced in four hours and nitrates were reduced. It did not produce sulphuretted hydrogen. No hæmolysis was produced on blood agar by the whole organism, nor did an emulsion of an agar culture nor a filtrate of a four-day old broth culture give hæmolysis of human, sheep or guinea-pig cells in 3% suspension. This filtrate contained no skin reacting substance for the few humans working in the laboratory, on whom it was tested in intracutaneous doses of 0·2 cubic centimetre. Guinea-pigs inoculated with emulsions of the whole organism showed no ill effect.

The organism is evidently a non-motile strain of *Bacterium coli* of the *commune* variety, falling easily into the group as set out so well by Topley and Wilson[2] in their discussion of the lactose-fermenting

bacteria. According to these authorities, this organism would be fixed by being Voges-Proskauer negative, methyl red positive, citrate negative and indole positive. Their views about the pathogenicity of the group are interesting and relevant. They say that organisms having the first two qualities may, under certain abnormal conditions, cause acute or chronic infective lesions in the urinary tract or elsewhere. They suggest that certain atypical forms, either fermenting lactose slowly or not producing gas from this substance at all, in the former respect like the organism under consideration, may be pathogenic, in virulence occupying a position midway between the usually non-pathogenic lactose-fermenters and very pathogenic lactose non-fermenters, such as *Bacterium typhosum*.

FIGURE II.
Showing section of small part of vegetation on the mitral valve.

In view of the work of Dudgeon and of Dudgeon and Pulvertaft, quoted by Topley and Wilson, but inaccessible to me, and considering the clinical data, the action of the organism on hæmoglobin *in vitro* is rather anomalous. The workers just mentioned investigated an organism associated with acute febrile urinary infection, similar to mine, in so far as it was a late lactose-fermenter and in fermentation reactions, but it differed in clotting milk. This organism of theirs was hæmolytic. The illness associated with my organism pointed very obviously to an investigation of its effect on hæmoglobin, and this was made with special care. It can, therefore, be said quite definitely that the organism did not at any time cause any change in hæmoglobin in whatever form this substance was introduced into the test. The organism was always of the γ type described by Paulson and Brown.[3]

Loking back on the history, it is clear that the patient had chronic suppurative pyelitis, with intermittent septicæmia, dating from her confinement six months before her death. A blood culture done during this period at the time of a shivering attack would probably have revealed the nature of the illness.

I find the literature of the subject of *Bacterium coli* sepsis, if not scanty, at least inaccessible. Felty and Keefer[4] give a clinical study of 28 cases of *Bacterium coli* bacillæmia, along with a review of the available literature up to the time of their publication (1924). Their conclusions were borne out to a great extent by the findings in this case. They found that infection of the blood stream by *Bacterium coli* is relatively infrequent and that the portal of entry is the urinary tract, the female genital tract and the intestinal tract in that order of frequency. It is more common in women in the child-bearing period and is especially liable to occur following operative procedures. An interesting observation of these authors is that the prognosis depends not on the sepsis itself, but rather on the extent, severity and location of the primary focus, since possibly, as they further observe, the organisms disappear from the blood stream very rapidly. In the case under discussion the conditions were quite different from those required to fulfil such expectations. Undoubtedly the primary focus persisted and was causing recurrent bacillæmia for at least six months, but with the establishment of a secondary focus on the mitral valve all chance of disappearance of the organism from the blood was gone, and the prognosis depended on the outcome of the heart lesion to at least an extent equal to that of the pyelitis. In effect the patient died partly from pulmonary œdema. Felty and Keefer observed metastatic lesions in only one-fifth of their cases and no instances of endocarditis were encountered. They finally concluded that a high leucocyte count, from 15,000 to 38,000 per cubic millimetre, was a favourable prognostic sign. In this case, however, it was irrelevant, since the patient had a progressive, ineradicable lesion of the heart.

Summary.

A case of septicæmia and acute bacterial endocarditis associated with a non-motile, non-hæmolytic (γ type) *Bacterium coli commune* is described.

Acknowledgement.

For permission to use the clinical record and to publish the case I must thank Dr. Alex. Murphy, Honorary Physician to the Brisbane Hospital, who first diagnosed the condition and without whose interest it would have been very difficult to obtain all the data here presented.

References.

[1] H. C. Brown: "Observations on the Use of Citrated Media", *The Lancet*, Volume I, 1921, page 22.
[2] W. W. C. Topley and G. S. Wilson: "The Principles of Bacteriology and Immunity", Volume I, 1929, page 420 *et sequelæ*.
[3] M. Paulson and J. H. Brown: "The Appearances Produced in Blood Agar by Bacteria of the Bacterium Coli Group", *The Journal of Infectious Diseases*, Volume LI, 1932, page 407.
[4] A. R. Felty and C. S. Keefer: "Bacillus Coli Sepsis: A Clinical Study of 28 Cases of Blood Stream Infection by the Colon Bacillus", *The Journal of the American Medical Association*, Volume LXXXII, 1924, page 1430.

Reviews.

CONDUCTION OF SOUND AND HEARING.

In summing up the question of "hearing properly so-called" in his book, "Sound Conduction and Hearing",[1] Zünd-Burguet remarks that "the question is extremely complex and is not solved in the present state of knowledge. At all events, the hypothesis of Helmholtz's appears untenable." The book is offered as an historical, critical and experimental study, and the reader is impressed with the large amount of research which the author has accomplished. Upon referring to the original French edition, one finds that it was published in 1914, and this English translation is by MacLeod Yearsley, of London.

The translator remarks that M. Zünd-Burguet "passes in review the history of his subject from the earliest times, he has surveyed an extraordinary collection of divergent and contradictory hypotheses put forward during the last century and finally reduces chaos to order . . ."

It is certainly curiously significant that today we should hark back to the opinion expressed in the fourth century B.C by Hippocrates. The translator claims that M. Zünd-Burguet by his work places the working of his electrophonoide method of treatment on a sound and logical

[1] "Sound Conduction and Hearing: An Historical, Critical and Experimental Study", by A. Zünd-Burguet, translated by M. Yearsley, F.R.C.S.; 1932. London: John Bale, Sons and Danielsson, Limited. Demy 8vo., pp. 139. Price: 8s. net.

basis. Certain contributions have appeared in this journal which suggest that the Zünd-Burguet treatment of deafness is not so established.

There is much in Zünd-Burguet's statement that the physiology of the *foramen ovale* and the *foramen rotundum* is bound up with and dependent upon the physiology of the apparatus of transmission. His opinions are much influenced by Secchi's theory; this he claims is a complete theory of conduction which makes the tympanic air the vehicle of sounds to the round window as the only portal of entry to the labyrinth. This is completely opposed to the doctrine of Helmholtz.

With regard to "hearing proper", Zünd-Burguet's experiments are described, and he claims that they show that the two theories, that the ear is an analysing apparatus (Helmholtz) and that it is a registering apparatus (Bonnier), are incorrect, and that it is necessary to introduce a third.

There is a chapter on the critical examination of the chief experiments and the interpretations which have been deduced from them.

In his conclusion Zünd-Burguet produces zoological, physical, anatomical and histological, and pathological proof which, he claims, shows the untenability of the several theories which have been put forward at various times. The historical part furnishes interesting reading, and it is obviously most comprehensive in its reference to modern times.

On referring to the original publication one finds that a valuable bibliography of nine pages has been omitted.

As is frequently met with in translations, one here finds that the text does not provide smooth reading, for in many places the translator has followed the original too closely and has made many of his sentences difficult to interpret. Savart's writings are referred to freely because of their outstanding importance in the history of theories relative to hearing.

We consider that the book should serve a useful purpose, particularly to physiologists and aurists.

EXAMINATION OF THE PREGNANT WOMAN.

Since Professor J. C. Windeyer first published in The Medical Journal of Australia an account of his methods of abdominal examination for the purpose of revealing the lie of the fœtus during the latter months of pregnancy and during labour, there has been a continuous demand for instruction in his methods. He has demonstrated his methods to graduates in Sydney and has visited other States for the same purpose. Many therefore will welcome the appearance of a small book in which he discusses abdominal examination, vaginal examination, rectal examination, and pelvimetry.[1] This is not an elaborate text book, but a small treatise on what is probably the most important part of obstetrics.

The larger part of the booklet is devoted to abdominal examination. Professor Windeyer shows that by abdominal palpation, vaginal examination can be practically eliminated. The work is well illustrated; some of the illustrations have been published in this journal. We recommend this treatise to medical practitioners, undergraduates in medicine, and nurses. Its moderate price should commend it to everyone.

POPULAR ESSAYS.

Mr. Elliott Napier, widely known as a competent journalist, has written a book of entertaining essays entitled "The Magic Carpet".[2] Most of these essays were originally written for periodicals and newspapers, and show the light touch of a master of journalism. The subjects cover a wide field: the author discusses literature, sport, travel and history, as well as many incidental trifles that prove the excuse for humorous and would-be humorous reflections on life and its vagaries. The style varies with the subject, but for the most part it is racy and vernacular, the style of an attractive talker. A diverse acquaintanceship with English literature is shown in the frequent and perhaps excessive use of literary allusion and illustration. But Mr. Napier reveals himself as a true lover of poetic beauty in his essay, "The Loveliest Lyric in the Language", though we may not invariably agree with his judgements. Cricket lovers will be interested to see two essays devoted to that hallowed subject, which is treated by the author with due reverence and enthusiasm. In "The Victorians" the greatness of Queen Victoria and her era are rightly upheld against the disparagement of Lytton Strachey and the moderns; an age that has produced such great men as Huxley and Darwin and Tennyson is worthy of respect. In conclusion, we would congratulate Mr. Napier on his versatility and his enthusiasms. No one can fail to find something of interest and amusement in this volume.

ORGANIC CHEMISTRY.

Professor Barger, in his "Organic Chemistry for Medical Students",[1] frankly adopts the attitude that the sole aim of the inclusion of organic chemistry in a medical curriculum is to furnish a basis for the later study of biochemistry. He excludes, therefore, most of the theoretical matter usually found in an elementary text book of organic chemistry and deals more fully than is customary with such matters as anæsthetics, fermentation, urea, uric acid and the purine group. The exposition throughout is clear and the matter well classified, but we feel that the absence of a theoretical background and of any but the briefest reference to the historical development of the science renders the treatment rather lifeless. The book would tend to encourage the student to look on organic chemistry as "a subject in the medical curriculum" rather than as a living science which is being applied more and more in medical research and practice.

One curious omission noted is that of any statement as to the inflammability of ether and the non-inflammability of chloroform and carbon tetrachloride, facts which should surely be of interest to medical students. Nevertheless, the book shows evidence of careful preparation, is accurate, and covers the ground of the course in organic chemistry usually followed by medical students.

A BOOK ON DRUGS FOR NURSES.

The handbook "Materia Medica for Nurses"[2] ably fulfils the intention of its author, Dr. A. M. Crawford, Professor of Materia Medica and Therapeutics, Saint Mungo's College, Glasgow, and Physician of the Royal Infirmary, Glasgow. He claims "to present a short summary of the elements of materia medica suitable for the nursing profession". The book contains eighty-nine pages and is clearly printed. The matter is arranged as in a text book on the subject, but, as the author states in the preface, "only those drugs in common daily use have been considered, with their important preparations, doses, actions and uses".

Utility has not been sacrificed on the altar of brevity, as is the danger in a short summary. The "table of important doses" includes sixty-two items, and eight biological preparations are described in the text in addition to the drugs. This, the second edition, has been brought up to date in accordance with the new revised edition of the British Pharmacopœia".

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[1] "Diagnostic Methods Used During the Later Months of Pregnancy and During Labour", by J. C. Windeyer, M.D., Ch.M., M.R.C.S., L.R.C.P., F.R.A.C.S., F.C.O.G.; 1933. Sydney: Australasian Medical Publishing Company, Limited. Demy 8vo., pp. 26, with illustrations. Price: 1s. 6d. net.

[2] "The Magic Carpet and Other Essays and Adventures", by S. Elliott Napier; 1932. Australia: Angus and Robertson. Crown 8vo., pp. 237. Price: 6s. net.

[1] "Organic Chemistry for Medical Students", by G. Barger; 1932. London: Gurney and Jackson. Medium 8vo., pp. 264, with illustrations. Price: 12s. 6d. net.

[2] "Materia Medica for Nurses", by A. M. Crawford; Second Edition; 1933. London: H. K. Lewis and Company, Limited. Crown 8vo.; pp. 98. Price: 3s. 6d. net.

The Medical Journal of Australia

SATURDAY, APRIL 8, 1933.

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Authors who are not accustomed to preparing drawings or photographic prints for publication, are invited to seek the advice of the Editor.

AUSTRALIA'S TROPICAL RESPONSIBILITY.

At the Australasian Medical Congress, held in Brisbane in 1920, one of the most important subjects discussed was the possibility of the permanent occupation of tropical Australia by a healthy indigenous white race. There is no longer any question of the possibility of such an occupation, for, as Dr. R. W. Cilento, in his Anne MacKenzie oration, published in this issue, states: "In Australia we have a greater population, purely white, living in the tropics than any other country in the world can boast, and these white men and women of the second and third generations live there without any loss of mentality, physique or fertility." In making this statement, Dr. Cilento refers to a comparatively small portion of the Australian continent. Vast areas of northern Australia are practically unpopulated, and Papua, which has for many years been in the care of Australia, is still undeveloped. When, after the Great War, the mandate for German New Guinea, New Britain and part of the Solomons was given to Australia, her responsibilities were greatly increased. At present Australia is faced with what Dr. Cilento calls the greatest of all her problems—"the demonstration to the world that we are capable of developing successfully the greatest remaining tropical area, and of bringing the scattered tribes of Melanesia out of their wilderness of famine and disease into the security of settled government and productive life". If Australia does not do these things, it is quite certain that some other nation will try to step in and do them in her place. The last decade has witnessed social upheavals of enormous magnitude; and changes among the nations at the present time are so rapid as to be almost kaleidoscopic. If Australia wishes to remain at peace and secure in her southern isolation, she must face her responsibilities. Dr. Cilento states, and none can with truth gainsay him, that "health is the foundation upon which every other developmental activity must rest". Ample confirmation of this view exists.

The Australasian Medical Congress of 1920 resolved *inter alia*:

> That it is essential to the effective settlement of the tropical Australia problem that the results of scientific investigation and practical experience be closely correlated with appropriate action, and be made available for the study of the various aspects of the problem and for the guidance of those who are settled, or propose to settle, in tropical Australia.

When, as recommended by the 1920 congress, the Commonwealth Ministry of Health was brought into being, steps were taken for the collection of data, for their correlation and for the organized control of disease in the tropical dependencies and in the northern part of Australia. The Australian Institute of Tropical Medicine at Townsville was pressed into the service, the hookworm campaign was undertaken with the aid of the Rockefeller Foundation, and the Division of Tropical Hygiene of the Commonwealth Department of Health was formed. The Division of Tropical Hygiene was the outward and visible sign that Australia was not unmindful of her responsibilities and was trying to face them. Eventually the School of Public Health and Tropical Medicine, endowed by the Commonwealth Government, was established at the University of Sydney. This school, which has

absorbed the Australian Institute of Tropical Medicine, is destined to be a large factor in the health of the countries bordering the Pacific; its place has, however, yet to be made.

When the full force of the financial depression was felt throughout the Commonwealth, the Commonwealth Government was forced to undertake certain retrenchments. The Minister for Health had to do his share of the unpleasant work and the sections of the Department of Health on which the ministerial ax fell included the Division of Tropical Hygiene; the Division was ruthlessly abolished. This has caused much concern and the wisdom of the Government has been called in question. The Queensland Branch of the British Medical Association regards the action of the Government as disastrous. Dr. D. G. Croll, speaking for the Queensland Branch, brought the matter before the recent meeting of the Federal Committee of the British Medical Association in Australia. He stated that the abolition of the Division of Tropical Hygiene would be regarded by other nations as an intimation that Australia did not intend to occupy effectually its tropical dependencies. He added that, in abolishing the Division of Tropical Hygiene and substituting nothing in its place, the Federal Government had rendered impossible the settlement of tropical Australia by a working white race. When a body like the Queensland Branch of the British Medical Association expresses such an opinion through its representative, it is surely time that some official statement of the position was made. The medical services in the tropical areas are, we understand, being continued as before and need not be discussed. If the investigational and other work of the Division of Tropical Hygiene is being done in its entirety by some other body, this should be made known, for the question is then one of name only and the defect may easily be rectified. If, on the other hand, the work of years has been abandoned and nothing further is being done, this also must be made known and immediate steps must be taken to reconstitute the Division. If the whole matter were reduced to pounds, shillings and pence, any monetary saving that has been effected (we believe it to be small) would pale into insignificance in comparison with the larger issues involved. Australia cannot afford to allow other nations to think that she is neglectful of her heritage.

Current Comment.

COARCTATION OF THE AORTA.

It is both curious and interesting that rare perversions of health or of development giving rise to clear-cut pathological pictures are being proved capable of more frequent diagnosis during life. There is, of course, the furtive kind of interest all medical men take in rare things that must be reckoned with, and though intensive study of the common events of medical practice is, all in all, of much greater significance to the community, it is also quite important that the rarities should be recognized. In these matters the morbid anatomist has always led the way. At first certain conditions are known alone to him, then an occasional *ante mortem* diagnosis is made, and finally a definite and increasing proportion of cases are recognized during life. The various forms of narrowing or interruption of the aorta are known to *post mortem* experts, but a valuable contribution to the subject is made by William Evans.[1] He has studied twenty-eight cases of such congenital abnormalities and classified them into six groups. Eighteen of his cases showed stenosis of the aortic arch with either a patency or closure of the *ductus arteriosus*. These formed the two chief groups. Others included complete atresia of the aorta, either in its arch or along the whole proximal portion, complete interruption of the aorta and, lastly, complete absence.

The majority of his cases (in fact all but five) showed either a stenosed aortic arch or atresic proximal portion with or without a patent *ductus arteriosus*. It was found that the incidence of these anomalies among subjects examined at necropsy was about one in a thousand.

The pathogenesis is discussed in Evans's paper, but that is perhaps outside the scope of this summary. What is of practical importance is the diagnosis. He concludes that no one symptom or group of symptoms will certainly indicate the diagnosis of congenital stenosis of the aortic arch. To begin with, many of the instances of this anomaly are found in young infants who die after days, weeks or months of existence, and in whom nothing more than a diagnosis of congenital *morbus cordis* is possible, if, indeed, it be possible. No less than seventeen of the cases collected by Evans were those occurring in infants. Of the other patients, two were between the ages of six and eight years, and the remainder averaged about thirty-four years at death, the youngest being sixteen and the oldest sixty years. So it will be seen that this anomaly is compatible with a moderate and perhaps even

[1] *The Quarterly Journal of Medicine*, January, 1933.

extended tenure of life. Reverting to diagnosis, the author suggests that one symptom may be significant. This is a sensation of "blood rushing to the legs" on standing up after having been in a horizontal position for some time. Pain in the region of the scapula has also been noted, possibly due to erosion of ribs by the pressure of hypertrophied arteries carrying out the necessarily extensive collateral supply. The presence of these vessels is easy to demonstrate if the condition is thought of. These tortuous and large arteries are found in the neck, chest wall, back, axilla and upper abdominal wall. As a rule they are found only when the *ductus arteriosus* is closed, and, therefore, their presence is not constant in all these aortic malformations. Blood pressure readings are very important. They are usually high, and are considerably lower in the femoral artery than in the brachial. Abnormal delay in the femoral pulse is not a conspicuous feature. (This is probably due to the transmission of a pulse wave through the stenosed aortic wall, which forms a potential diaphragm.) Here it might be remarked that in one famous cardiological clinic patients suffering from hypertension have been made the subject of a special investigation. On the advice of the chief of the clinic, all the patients were first carefully examined to exclude the possibility of any subjects of aortic coarctation being included in the inquiry. To the surprise of everyone, several cases of coarctation were discovered, some patients having attended the clinic for several years without the true diagnosis having been suspected.

As above remarked, focal erosion of the ribs in the posterior portions and at the lower borders occurs and may be demonstrated by radiographic studies. This is an important aid to diagnosis. X rays may also reveal a gap in the aortic outline, best seen in the left oblique position. The actual cardiac signs are those of various cardiac lesions. A rough systolic murmur may be heard over the base of the heart, and a thrill may accompany it. It should be noted that murmurs can frequently be heard over the enlarged collaterals. These may be pursued farther down the sternum and into wider zones than the more familiar truly "aortic" murmurs. These signs are merely corroborative and not diagnostic.

The French cardiologists attach some importance to instrumental methods, and Evans mentions in one patient, whose condition was diagnosed *ante mortem*, the occurrence of different oscillometric readings in arm and leg. C. Laubry, D. Routier and A. van Bogaert, in a recent study of this subject, state that there is a difference of amplitude of arterial expansion in the two territories, the *"pre- et post-stenosique"*, and note certain differences in the systolic wave on tracings.[1]

It will be seen that there is enough evidence to show us that the diagnosis should be thought of when the above signs are noted. It may be asked: "Why trouble, what useful end is to be served?" The answer to this question is that these patients frequently die of cardiac failure and that sudden death is not uncommon. In one-fifth of the collected cases the patients have died of rupture of the aorta (or even of the heart), and over one-tenth died of a cerebral lesion. The reason for these modes of death will be readily apparent. Surely no apology is needed for pointing out that even this rare but serious condition should be looked for. It is true that little can be done, but at least the patient's life can be so ordered as to impose a minimal strain on the perverted circulatory mechanism. But it is surely an advantage to recognize the possibility of sudden death, and the relatives of a sufferer from aortic coarctation have just as much right to know his prospects of life as if his malady was a common one.

[1] *Annales de Médecine*, July, 1932.

RECTAL AND VAGINAL EXAMINATIONS DURING LABOUR.

ALTHOUGH rectal examination of women in labour was introduced to take the place of vaginal examination, the method is not generally used. The expected reduction in maternal mortality has not occurred and many obstetricians find that they cannot always gain the information they desire by using the rectal method. H. W. Mayes, in a recent communication, states that when rectal examination was first introduced, vaginal antisepsis was not used.[1] He holds that it is possible at the present time practically to sterilize the vagina and that repeated vaginal examinations can be made with little, if any, added risk to the mother. He uses a solution of mercurochrome as a vaginal instillation. He analyses 3,884 cases occurring at the Methodist Episcopal Hospital in Brooklyn, New York, and states that rectal examination is accompanied by a 10% error, even when it is used by obstetricians of experience. He holds that vaginal examinations are much more satisfactory to both the patient and the obstetrician and that the satisfaction of knowing and not guessing the condition of the cervix is of great value. He quotes interesting figures. After 3,884 vaginal deliveries of viable fœtuses there was an uncorrected morbidity of 5·7%. The difference between the morbidity following operative and spontaneous delivery was 1%. In 1,947 cases in which rectal examinations only were made, the morbidity was 5·08%. In 3,180 cases in which at least one rectal examination was made, the morbidity was 5·4%. In 595 cases in which vaginal examinations only were made, the morbidity was 6·8%. These figures, of course, would be influenced by the lie of the fœtus and other factors; probably when vaginal examination was found to be necessary, some abnormality was often present. This paper by Mayes is intended as a justification for the use of vaginal examination. We would use it rather to emphasize the need for mastery of abdominal palpation, as described by Windeyer in his recently published booklet.

[1] *Surgery, Gynecology and Obstetrics*, December, 1932.

Abstracts from Current Medical Literature.

RADIOLOGY.

Cholecystographic Diagnosis of Neoplasms of the Gall-Bladder.

B. R. KIRKLIN (*American Journal of Roentgenology*, January, 1933) considers that cholecystographic distinction between transradiant cholesterin stones and small new growths, especially papillomata, is frequently possible. The shadow defects produced by papillomata maintain the same relative situation on all films, even at reexamination. The defects are clear, oval or round, and small, usually less than 0·5 centimetre in diameter. They are never immediately at the pole of the fundus, and are often remote from it. In many cases the defects are marginal and then are especially suggestive of papillomata. As a rule only one or two defects are visible, but occasionally there are three or more. When multiple, the defects are well separated, never closely grouped. Usually the defects will be most plainly seen in the skiagrams taken after food has been given and the gall-bladder has contracted down and is partially emptied. In many cases they will not be visible at all when the gall-bladder is filled. Except for the rarefactions depicting the papillomata, the shadow of the gall-bladder is of good density, often better than the average; this is perhaps explainable by the fact that gall-bladders with hypertrophic rugæ, which are frequently associated with papillomata, produce the greatest concentration of bile. It is obvious that many of the cholecystographic manifestations of papillomata may be imitated by those of small cholesterin gall-stones. Nevertheless, gall-stones usually change in situation, tend to group closely as the gall-bladder contracts, are usually facetted and angular in outline, often have a dense deposit of calcium on their surfaces, and are less clearly transradiant than papillomata. However, when papillomata are associated with transradiant calculi, as sometimes happens, efforts to distinguish one from the other are likely to be futile. In many cases it will be of help to obtain a tangential view to show the papillomata in relation to the wall of the gall-bladder, since a stone always has a layer of opaque bile between itself and the wall. Adenomata give similar appearances to papillomata, except that they are usually single and larger, and situated in the fundus of the gall-bladder. Carcinoma often begins in the neck of the gall-bladder, but it may arise in the fundus. Depending on its variety, whether scirrhous, medullary, or mucoid, the growth may infiltrate the wall of the gall-bladder or project into the lumen as a frank nodule. Often the gall-bladder is enlarged and filled with pus and serum; rarely it is contracted. Unfortunately visualization of the gall-bladder by cholecystography requires not only that the cystic duct be sufficiently patent to permit the inflow of bile, but that the function of concentrating the bile be preserved to a considerable degree. Since carcinoma has a predilection for the cystic inlet, obstruction is to be anticipated in most cases, and it may occur early. Further, when a growth has invaded a large area of the wall of the gall-bladder, as will have occurred in most cases at the time of examination, interference with concentration is inevitable. Hence the prospects of demonstrating a carcinoma as a defect in the cholecystographic shadow are not bright, although it may occasionally be possible.

Chronic Deforming Disease of the Acromio-Clavicular Joint.

NATHAN (*Münchener Medizinische Wochenschrift*, December 9, 1932) states that the symptoms of chronic deforming disease of the acromio-clavicular joint may be: (i) circumscribed pain around the acromio-clavicular joint; (ii) limitation of movement as seen in *periarthritis humero-scapularis*, but often more marked owing to the mechanics of this joint. X ray examination reveals the following changes: (i) Spur formation of the joint margins with partial displacement of the joint level; (ii) spur formation at the ends of the joint margins without visible involvement of the joint cavity; (iii) calcium deposition in joint capsule; (iv) deformation of the neighbouring bones (atrophy and destruction of the joint). The conditions to be considered in the differential diagnosis are muscular contractures, bony processes in the region of the shoulder joint, disease of the bursa, *periarthritis humero-scapularis*. An X ray examination must always be made.

Monomelic Flowing Hyperostosis or Melorheostosis.

ERNEST KRAFT (*Radiology*, January, 1933) reviews the literature and discusses monomelic hyperostosis. The condition consists of a dense cortical hyperostosis resembling sclerotic bone. The lesion is expansive, causing an enlargement of the affected part and extending in a linear track in the form of a longitudinal band, like a hyperostotic "flow". The changes are confined to a single extremity, either upper or lower. In the early cases the hyperostotic flow is confined to isolated parts of an extremity. In the advanced cases the flow is either interrupted or continuous. An affection of other parts of the body has never been definitely proved. Microscopically the tissues do not present specific features. The disease is slowly progressive, but it may become stationary in the early as well as in the late stage for many years. The symptoms are rheumatic pain and limited movement of joints. In most cases the complaints are vague and ankylosis of joints may cause relatively little concern. Only by X ray examination can the diagnosis be made. The ætiology is still unknown, in spite of the fact that the clinical features point towards a congenital nature. The lesions, although resembling other bone diseases, represent a separate entity and are benign in character.

Pyloric Stenosis with Hypertrophy of the Pyloric Muscle in the Adult.

E. P. MCNAMEE (*American Journal of Roentgenology*, January, 1933) discusses hypertrophic pyloric stenosis in the adult and reports two cases in detail. X ray examination reveals a concentric and elongated pyloric canal which is not affected by manipulation or medication, with some degree of pyloric obstruction and gastric retention. The condition is probably of congenital origin. The diagnosis cannot be made on the X ray evidence alone.

Myositis Ossificans Progressiva.

W. F. MAIR (*Edinburgh Medical Journal*, January, 1932) discusses *myositis ossificans progressiva* and reports two cases. This rare and peculiar disease occurs in children and is characterized by the appearance of masses of bone or of areas of calcification in the muscles, tendons, ligaments, fasciæ and aponeuroses. It is commonly associated with congenital abnormalities, such as malformation of the great toes. The disease is in a sense misnamed, as the whole of the pathological process is enacted in and around the interstitial connective tissue, the changes in the muscle occurring only secondarily to this. In essentials the disease consists of a gradually progressing ossification, which takes place by a hyperplasia of and replacement of the interstitial connective tissue by a loose embryonic structure which organises to form a cartilaginous ground substance. In this process the muscle fibres become atrophied, compressed and disappear. This cartilaginous ground substance becomes in its turn the seat of true bone formation. The derivation of the osteoblasts which take part in this process is still uncertain. There is much to suggest that they are probably some of the connective tissue cells which can assume this special function. The process may not proceed so far. Instead of the formation of cartilage and subsequently of bone, the new loose connective tissue may be the seat of deposits of calcium salts, lacking the more orderly arrangement found in bone formation. This appears to be the case in *calcinosis interstitialis progressiva*. There calcium salts, *plus* the atrophied and, it may be, disintegrated elements of the original tissues of the part, provide the detritus found in the lesion of these cases. Both these two closely allied conditions are due to a primary disturbance of development (in which in the mesenchyma the potential function of osteogenesis has been impressed on all the connective tissue structures) *plus* a disorder of

calcium metabolism the nature of which is quite unknown. This disorder permits in the one case the development of hard bony masses, and in the other, calcium deposits in similar situations. It is probable that there is an hereditary factor in the causation of the disease. While trauma is an undoubted factor in the production of the lesions of the disease, it only determines the site at which a lesion will develop in the individual who already has the potentialities of abnormal bone formation.

PHYSICAL THERAPY.

Irradiation of Giant Cell Bone Tumours.

G. E. PFAHLER AND LEO D. PARRY (*The American Journal of Roentgenology and Radium Therapy*, September, 1932), discussing giant cell tumours of bone, acknowledge that the treatment formerly was surgical and that radiotherapists were called upon to treat only patients with recurrent tumours or those who refused to take the surgeon's advice. The early cases were erroneously diagnosed as sarcoma both clinically and microscopically. The results obtained by radiotherapists were so convincing that they have been called upon more and more to treat primary cases, and at present surgeons rarely operate upon these tumours. The objections given to an operation or biopsy are: breaking down the defence mechanism, rupture of the capsule, if one is present, and release of the tumour cells into normal tissue if there is any tendency towards malignant disease. If irradiation is contemplated, it often leads to delay, and the response to irradiation is retarded after incision or curettage. The possibility of infection is very great. Often these tumours are near the joint, and any infection may lead to serious joint complications. Röntgen rays have been used by the authors in the treatment of giant-cell tumours of bone for twenty-five years.

Dangers of Internal Radium Therapy.

FREDERICK B. FLINN (*Archives of Physical Therapy, X-Ray, Radium*, August, 1932) describes patients who had been taking a preparation called "Radiothor". Medical men did not believe that the patients had actually ingested radio-active material because of so many fake preparations on the market. An electroscopic test together with the clinical picture and history gave the correct diagnosis. This preparation contained two microgrammes of radio-active material in solution in triple distilled water, which was supposed to be poured into a glass of water and drunk. The author testified that this preparation was dangerous and might produce the same clinical picture as was seen in the industrial cases of radium poisoning. He goes on to quote the case of one girl whom he examined a year ago and who had not worked since 1918. She bore children and remained in apparent good health until three years previous to the examination. Her trouble at the time was a spontaneous fracture of the femur, which apparently healed, although recent radiograms showed that there had been very little calcium deposit. Two years later she had another spontaneous fracture about ten centimetres (four inches) above the first one, and when examined a year later she was still in a plaster cast with no union. Up to the time of the examination radium had not been taken into consideration. At the present moment she is still in a cast, but without any indication of new bone being formed. She looks perfectly well with, perhaps, a slight anæmia, which ordinarily would have no significance. In the past few weeks it was discovered that the teeth in the lower jaw were loose and ready to fall out, and this girl still has a radio-activity of around ten microgrammes. The author has examined twelve persons who have taken "Radiothor" and has found all but three to be radio-active, and one of the three is just on the border-line. He concludes by stating that the quantity taken varied from 160 bottles to several thousand.

Radiation and Operation in Malignant Disease.

JOSEPH COLT BLOODGOOD (*Annals of Surgery*, November, 1932), discussing bone sarcoma, states, as he has done so often previously, that a biopsy should never be done without preliminary irradiation and that the first line of attack in the treatment of any malignant disease of bone should be a thorough and complete course of deep X ray therapy. Secondly, he refers to cancer of the breast and states that according to statistical studies no one has ever improved on Halsted's figures, which he quotes in detail. He has not found that post-operative irradiation increases the five-year cure or reduces the number of local recurrences. He then considers Keynes's method of interstitially applied radium and states that it ought to be tried first in very advanced cases. He urges his colleagues to cease using extensive surgical operation in extensive cancer of the breast. He is now giving pre-operative irradiation followed by the complete operation, but states that his work is yet experimental. Thirdly he takes cancer of the cervix and states that the evidence today is in favour of radiation treatment, and concludes by remarking that, unfortunately for women with cancer of the cervix today, there are too many trained operators and not enough trained radiologists. Fourthly, cancer of the oral cavity is reviewed and surgery for the very early lesions is recommended, and radium when the growth is beyond very easy surgical access. Fifthly, cancer of the larynx as treated by Harmer and Cade is mentioned. The author was most impressed by their technique and looks forward to cancer in this situation losing most of its horrors. In conclusion the author urges the use of irradiation in the same way as the old therapeutic test for syphilis has been used.

Myelogenous Leuchæmia.

E. L. JENKINSON (*American Journal of Radiology*, January, 1933) reports good results obtained after deep X ray therapy in cases of myelogenous leuchæmia. In patients having a high myeloblastic count the prognosis is unfavourable and if at any time a marked increase in the myeloblasts occurs, death as a rule follows promptly. Poor results can be expected in patients with an elevation of temperature or a low hæmoglobin count. All patients are irradiated over the chest; cross-firing is never applied to the spleen. In most cases the spleen is definitely avoided. Patients with a large soft spleen have a better prognosis than those with a hard and only moderately enlarged spleen. Irradiation of the spleen partially destroys it and it becomes small and hard. It is a mistake to destroy the spleen, which has two distinct functions, namely, forming blood and also destroying blood. The bones of the chest are rich in marrow throughout life; possibly this is one reason for the favourable response. Also the chest contains large amounts of blood and the direct irradiation of the blood may cause favourable changes in the circulating leucocytes.

Irradiation in Carcinoma of the Breast.

IRA KAPLAN AND RIEVA ROSH (*Annals of Surgery*, January, 1933) discuss the question of post-operative and pre-operative irradiation in cancer of the breast and state that they consider that pre-operative irradiation is of exceptional value in all cases. This is explained by the fact not only of the direct action of the rays on the malignant cells which are killed outright or hindered in their growth, but also by stimulation of the defensive processes of normal tissues which thereby inhibit extension and further growth of the malignant cells. It is also stated that irradiation definitely limits tumour growth to the tissue already involved, so that its removal may be more safely accomplished. At Bellevue Hospital since 1929 all operable breasts have been previously irradiated. From 1924 to 1930 270 patients with carcinoma of the breast were treated; of these 200 had involvement of one axilla, ten had involvement of both axillæ and thirty-five involvement of one supraclavicular area. Sixty-two patients are shown to be alive and well, 46 of these after three years, 28 after four years, and ten after five years. The technique considered to give the best results is a combination of external X radiation over the local area and adjacent lymphatic tissues, together with interstitial treatment with radium needles and tubes.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch of the British Medical Association was held at the Alfred Hospital, Melbourne, on September 21, 1932. The meeting took the form of a series of clinical demonstrations by members of the honorary staff. (Part of this report was published in the issue of April 1, 1933.)

Apparatus.

Dr. Hugh Trumble demonstrated a number of mechanical devices which he had designed for various purposes. One of these was an apparatus to relieve one lower limb of weight-bearing. The splint consisted of: (i) a small padded metal saddle fitting neatly to both ischial tuberosities and kept in position by a metal extension curving forwards and upwards between the legs to the region of the pubic crest, on which it impinged through the medium of a padded metal disk; (ii) a strong metal tube attached to the under surface of the saddle component by a pin, allowing limited movement in the sagittal plane, and attached at its inferior extremity to the heel of the boot on the affected side. The apparatus was strong and simple, and effectively transmitted the weight of the body to the ground, so relieving the limb concerned of weight-bearing. Dr. Trumble remarked that a detailed description of the splint was in course of preparation.

Another exhibit was a special type of head rest or support, for use in operations upon the brain. A plaster of Paris shell was moulded on the appropriate aspect of the head prior to operation and then affixed to a metal ring which was attached to an operating table and was adjustable in all directions. The rest was of particular use in operations upon the cerebellum. A special device for facilitating the administration of inhalation anæsthetics through an opening in the plaster shell was demonstrated. Dr. Trumble said that, by means of the head rest, efficient and comfortable fixation of the head was attained.

Oxygen and Carbon Dioxide Therapy.

Dr. Geoffrey Kaye demonstrated apparatus employed in the administration of oxygen and carbon dioxide. He stated that oxygen therapy had as its aims the correction of anoxæmia, the provision of an atmosphere sufficiently rich in oxygen to correct the most severe degree of anoxæmia, and the maintenance of such concentration of oxygen until maximal benefit was obtained.

To be effective oxygen must be administered in sufficiently high concentration to restore the oxygen content of the circulating blood to normal. The necessary concentration could be determined only by trial and error in each individual case, and might vary from 40% to 98% (as pure as it was mechanically possible to deliver). The supply of oxygen must be unrestricted both in amount and duration of administration. High concentrations of oxygen were not harmful, but only beneficial, to an anoxæmic person.

Dr. Kaye remarked that the administration of oxygen by the funnel and tube method was useless, as it enriched the atmosphere by only 3% of oxygen. Administration by means of an intranasal catheter was efficient, providing the rate of delivery of oxygen was adequate; if it was not adequate, the oxygen concentration of the blood might be lowered rather than raised. Best results were obtained by the delivery of ten litres of oxygen per minute, with a "number 10" catheter (French scale). Many patients found the presence of an intranasal catheter irksome. Mica tents were suitable for patients who were restless or delirious or who found the intranasal catheter intolerable. At a rate of delivery of eight to ten litres per minute, an atmosphere containing 30% to 50% of oxygen could be obtained. Tents were hot and confined, and moisture and carbon dioxide tended to accumulate, so that it was desirable to allow two minutes' relief from the tent in each half hour. During this time and during the giving of food or medicine, the patient relapsed into anoxæmia. The use of a closely fitting gas anæsthetic mask and a rubber bag enabled an atmosphere of almost pure oxygen (98%) to be provided. This method was admirable in the treatment of severe degrees of anoxæmia, but was somewhat irksome to the patient and was wasteful in that the oxygen concentration could not be reduced as the anoxæmia abated. The McKesson oxygen therapy apparatus delivered oxygen under a slight positive pressure in concentrations controllable between 60% and 98%. The patient received the gas through a nasal inhaler, which could be worn for days if necessary. If desired, a mask or a tent could be substituted for the nasal inhaler. This apparatus was probably the most comfortable for prolonged use and the most efficient in cases of grave anoxæmia.

Dr. Kaye went on to say that treatment should be initiated with the richest atmosphere available. The blood pressure and the rate of pulse and respiration should be recorded and used throughout the treatment as a guide to the concentration of oxygen required. By repeated tests and adjustments of the concentration a final "maintenance" concentration could be ascertained, and could be supplied until the anoxæmia had abated. When the physical signs, mental symptoms and personal sensations of the patient justified it, the oxygen concentration was reduced by stages to almost atmospheric values, when administration could be terminated.

Dr. Kaye next discussed the various conditions in which the administration of oxygen was indicated. He remarked that it was of great value in the treatment of pneumonia, especially if instituted early in the course of the disease. It was palliative only in the treatment of respiratory obstruction, but might help to tide a patient over until suitable treatment was available for the removal of the obstruction. In the treatment of chronic pulmonary disease and cardiac disease the administration of oxygen was also merely palliative; but it might be of great value in relieving the patient from acute anoxæmia. Oxygen therapy was of very little avail in the treatment of a paroxysm of asthma; but routine administration for one or two hours daily in the interval period had been said to lengthen the intervals between attacks and even to effect a cure. Probably these claims were unduly optimistic.

Other conditions in which the administration of oxygen was valuable were poisoning by noxious gases and *asphyxia neonatorum*. Oxygen could be given to the mother before the division of the umbilical cord, or subsequently to the infant by means of an inhaler or tent.

Dr. Kaye remarked that carbon dioxide was a by-product of metabolism and the physiological stimulant to the respiratory centre. Although a useful and potent respiratory stimulant, synthetic carbon dioxide could be gravely abused; for overdose might lead to fatigue of the respiratory centre and respiratory arrest. The gas is usually administered admixed with oxygen ("Carbogen", "Dicarbox"), but should not be used in a greater strength than 10% for brief administration, or 3% to 5% for prolonged use. Carbon dioxide was contraindicated when there was respiratory obstruction, for in this condition it was already present in excess. It was, however, allowable should respiration have become entirely arrested before the administration of oxygen was begun.

In the treatment of ordinary lobar pneumonia oxygen was the primary need, and the use of carbon dioxide was optional. Since prolonged oxygen therapy by means other than tents might cause depletion of carbon dioxide, the administration of a small amount might be preferable to that of pure oxygen. In the treatment of surgical or post-operative pneumonia, which usually had an atelectatic basis, carbon dioxide was most valuable. It could be administered as a 10% mixture for five or ten minutes in every two hours of the day succeeding the operation, or as a 5% mixture for twenty minutes in every two hours. Such *régime* would tend to abort a threatened pneumonia and to facilitate recovery from the developed condition. A course of carbon dioxide therapy should ideally follow every abdominal operation or operation where anxiety was felt for the respiratory system. The inhalation of a gas mixture containing 5% of carbon dioxide was valuable in cases of poisoning with noxious gases or anæsthetics.

Respiration was stimulated, the resulting hyperpnœa increasing the oxygen intake and eliminating the poisonous substance. The use of 5% carbon dioxide was preferable to that of pure oxygen in the treatment of *asphyxia neonatorum*, since respiration was thereby stimulated and any tendency towards atelectasis diminished.

Urethroscopic Appearances.

DR. HENRY MORTENSEN, by means of water-colour drawings and the Glingar urethroscope, demonstrated many of the common conditions occurring in the course of chronic urethral infections: lacunitis, littritis, soft and hard infiltrations *et cetera*.

Chronic Cervicitis.

DR. J. M. BUCHANAN, DR. H. G. FUENELL, DR. R. D. AITCHISON, and DR. F. J. BENNETT presented a series of patients suffering from chronic disease of the *cervix uteri*. Dr. Buchanan discussed the differential diagnosis and treatment of chronic cervicitis.

Examples of simple erosion, follicular cervicitis, hypertrophic cystic cervicitis, cervical mucous polypus, and recurrent *carcinoma cervicis* were shown. The appropriate line of treatment in each case was indicated.

The results of the following different methods of treatment were shown: (i) application of iodized phenol in simple erosion; (ii) linear cauterization combined, if necessary, with ignipuncture in mildly hypertrophic cases; (iii) Sturmdorf operation of conical excision of the cervix in hypertrophic cystic cervicitis; (iv) Fothergill's amputation and plastic repair for advanced cervicitis associated with prolapse.

Dr. Buchanan pointed out that, by a careful selection of the methods available, practically any case of cervicitis could be brought to a satisfactory termination.

DR. W. G. CUSCADEN sounded a warning note when he mentioned the presence of early malignant change in advanced chronic cervicitis and urged that sections should be taken from "ugly" cervices before treatment of the lesions as chronic inflammation only was commenced.

Dr. Buchanan, in reply to Dr. Cuscaden, said that in suspicious cases in which the disease did not appear to be subsiding after linear cauterization, sections were at once submitted to the pathologist. He considered the reaction to cautery in many cases of great diagnostic as well as therapeutic value. Cervicitis not complicated with malignant disease invariably showed improvement in three weeks.

Tumour of the Cerebellum.

DR. H. C. COLVILLE showed a boy, aged twelve years, who had been operated upon six days previously for tumour of the cerebellum. Symptoms had commenced fifteen months previously with headache and vomiting; these had continued severely for about eight months, but since then had not been in evidence. Failure of vision had been noticed about four months before operation. Investigation after admission to hospital in August, 1932, had revealed the presence of bilateral papilloedema and early atrophy of the right optic nerve, but no other general or local signs. Radiography and dye tests had revealed the existence of a marked internal hydrocephalus, with evidence of blockage of the flow of cerebro-spinal fluid somewhere in the posterior fossa. The operation of cerebellar exploration had been decided upon on these indications. At operation, which was performed under local anæsthesia, a wide bilateral exposure of the cerebellum revealed the existence of a large, soft, solid tumour occupying the greater part of the left cerebellar hemisphere and the vermix. This was partially removed by a diathermy knife and loop, in the manner described by Cushing; but in spite of blood transfusion during the later stages, the child at the end of two and a half hours was so shocked that the operation had to be terminated, and at least one-half of the tumour had to be left behind. The child made an uneventful recovery and had already (six days after operation) a marked diminution of his papilloedema. The tumour on section proved to be a fibrillar astrocytoma.

Femoral Tumours.

Dr. Colville next showed two children suffering from diffuse swellings of the femur, which presented somewhat similar clinical and radiological appearances. The first patient was a boy, aged fourteen years, who, three years previously, had had his right kidney removed for a malignant tumour which had been described pathologically as "embryonic carcinoma". He had remained well for two and a half years, but had then complained of pains in the lower part of the left thigh; and it soon became apparent that there was a rapidly growing neoplasm of the femur in this situation. Although this was thought to be secondary to the original growth in the kidney, the radiographic appearances suggested a primary periosteal sarcoma. There was no response whatever to intensive deep X ray therapy, and at the time of the meeting the tumour had reached huge proportions; the boy was rapidly failing from cachexia.

The other patient was a girl, aged seven years. She had first complained of pain in the upper part of the right thigh two months previously; this had been followed by diffuse swelling. The X ray appearances were those of bone destruction and periosteal reaction, and suggested the possibility of chronic osteomyelitis. There was no response to the Wassermann test. (Subsequent to the meeting this case was submitted to biopsy and the tumour was found to be a highly malignant round-celled sarcoma.)

Tuberculosis of Joints.

DR. C. J. O. BROWN showed a male patient, aged fifty-four years, who had injured his left wrist twelve or thirteen years previously, since when he had continued to lose more and more the use of his hand. He had been unable to work for twelve months. The wrist was swollen; movements were very restricted and associated with some grating. The fingers could not be fully flexed, and the thumb was held in the same plane as the fingers. There was no reaction to the Wassermann test. X ray examination revealed old destructive arthritis and osteitis of the lower ends of the radius and ulnar and the carpus, probably tuberculous.

The wrist had been fixed in plaster, and later a plaster mould, and, finally, on a metal "cock-up" splint. Steady improvement had resulted, but the function of the hand was still poor.

Dr. Brown's second patient was a man, aged thirty-one years, who had knocked his right elbow on a post four years previously, and since then had never been able to use the joint properly. During the week prior to the meeting he noticed a great increase in the weakness of his right hand and had some pain in the forearm and wrist.

The arm and forearm were greatly wasted; the elbow was held in a position of partial flexion and movements of the joint were limited. There was no reaction to the Wassermann test. X ray examination revealed gross destructive arthritis with a punched-out appearance not typical of tuberculosis, though the diagnosis of tuberculosis was probably correct.

In treatment, fixation of the elbow was carried out. Dr. Brown stated that excision of the joint would be required if improvement was not rapid.

Dr. Brown's third patient was a male, aged eighteen years, who had suffered from pain in the back for six months prior to December 22, 1931. X ray examination had revealed destructive arthritis of the left sacro-iliac joint, probably tuberculous, also some involvement of the right sacro-iliac joint.

The treatment had consisted in rest in a plaster bed with extension to the legs until the general condition improved. On June 8, 1932, a Verrall's bone grafting was done.

In July the patient complained of pain in front of the right ear, which, he said, had been present on and off for a long time, but was getting worse. There was tenderness over the right temporo-mandibular joint, and the whole lower jaw appeared to be excessively mobile. There was grating in the right temporo-mandibular joint.

X ray examination on July 25, 1932, revealed marked destruction of bone and cartilage over the condyle of the right mandible.

Treatment consisted in fixation of the jaw by capping the teeth and wiring. This was carried out by Mr. Fegent.

Myositis Ossificans.

Dr. Brown's next patient was a man, aged thirty-one years, who fell from a wagon in January, 1932, and struck his face on the iron-work of the wagon. The right side of his face and jaw became greatly swollen and painful, and as the swelling subsided his jaw became increasingly stiff. He consulted a doctor fourteen days after the accident and was ordered to apply "Antiphlogistine", but had no other treatment.

At the time of the meeting the jaws were almost completely locked and there was a hard mass in the situation of the masseter muscle in the right cheek. X ray examination revealed an area of bone formation in the situation of the right masseter muscle.

The treatment suggested by Dr. Brown was that the jaws be kept completely locked by capping the teeth and wiring for a period of six to twelve months in the hope that the pathological new bone would disperse.

Lupus Erythematosus.

DR. ROBERT C. E. BRODIE showed a man, aged thirty-two years, who had been treated two years previously with gold compounds ("Krysolgan" and gold sodium thiosulphate) for a chronic *lupus erythematosus* of twelve years' standing. The whole of the upper part of the face and the sides of the neck and the ears had been involved. The whole condition had cleared up, but there was a recurrent area, five millimetres in diameter, on the left side of the forehead. A fresh course of gold therapy had been commenced.

Dr. Brodie's second patient was a male, aged twenty-four years, affected with typical lesions of the discoid type of *lupus erythematosus* on the nose and cheeks. The condition commenced two years before whilst the patient was in New Guinea, and had become progressively worse. The patient had just returned from New Guinea, and no treatment had been given. Gold therapy would be commenced at once.

Alopecia.

Dr. Brodie's third patient was a boy, aged seven years, who, at the age of three years, had lost the whole of the hair on the scalp, eyelids and eyebrows. When first seen nine months before the meeting there was still no hair. Local therapy with ultra-violet rays from an air-cooled mercury vapour lamp was given, and thyreoid extract was administered twice a day in doses of thirty milligrammes. At the time of the meeting there was an abundant growth of hair over the crown of the head, but no sign of growth on the sides or on the eyebrows or eyelids. Treatment was to be continued.

Dr. Brodie next showed a male patient, aged twenty-two years, suffering from generalized alopecia. Five months previously a patch of *alopecia areata*, five centimetres in diameter, suddenly appeared on the back of the head. This was gradually followed by a general fall of hair from the scalp, eyelids, eyebrows, axillæ and pubes. There was no reaction to the Wassermann test. Dr. Brodie remarked that utra-violet therapy, both general and local, would be instituted at once.

Depressed Fracture of the Maxilla.

DR. BRYAN FOSTER and DR. T. G. WYNNE showed a boy, aged ten years, who had been kicked in the face while playing football. This had caused a depression of the malar prominence and irregularity of the lower margin of the orbit, resulting in marked facial asymmetry. An opening was made into the antrum through the canine fossa, and by the use of a raspatory as a lever the depressed fragment was replaced.

Carcinoma of the Antrum of Highmore.

DR. BRYAN FOSTER showed a male patient, aged sixty-five years, who had suffered from severe pain in the left side of the face for two months. The pain was described as a constant ache; sometimes it became shooting in character. Intranasal examination revealed no abnormality. There was extreme loss of translucency to transillumination. X ray examination revealed gross thickening of the antral mucosa. Malignant disease of the antrum was suspected on account of the pain. Dr. Foster remarked that chronic inflammatory trouble in the antrum was usually painless. By means of a Caldwell-Luc operation a grossly thickened antral mucosa was disclosed. Macroscopically it was impossible to decide whether the thickening was due to malignant disease or chronic inflammatory trouble. A specimen was sent to the pathologist, who reported "rapidly growing carcinoma". A bomb containing seventy milligrammes of radium was inserted and left in position for thirty-six hours. The patient had obtained almost complete relief from pain, but Dr. Foster remarked that at a time four weeks after the treatment, it was too early to know what the ultimate result would be.

Foreign Bodies in Œsophagus and Bronchus.

Dr. Foster also showed a skiagraph of a motor lorry driver who, in a collision, had smashed a vulcanite upper denture. He had spat out a number of fragments of his plate. He was admitted to hospital complaining of pain in the chest and inability to swallow. X ray examination revealed a large foreign body in the œsophagus at the level of the fourth dorsal vertebra and a smaller one in the left bronchus, at the level of the sixth vertebra.

Under local anæsthesia the foreign body in the œsophagus was exposed with an endoscope and found to be a jagged piece of plate impacted with its long axis anteroposteriorly. It was manipulated into a more favourable position for removal and then slipped from the grasp of forceps and passed on to the stomach. Four days later about half a tooth plate was passed *per rectum*. The second fragment was found in the left bronchus and presented no difficulty to endoscopic removal.

Dr. Foster remarked that X ray examination should always be made when the presence of a foreign body in the bronchus or the œsophagus was suspected. It was fortunate that the rule was not departed from in this case, as, although it was fairly obvious from the symptoms that there was a foreign body in the œsophagus, there was nothing to suggest that the bronchus had also been invaded. Had X ray examination not disclosed the presence of the two foreign bodies, the bronchial one would probably have been overlooked till dangerous lung complications had supervened.

Mitral Stenosis.

DR. M. D. SILBERBERG showed nine patients to illustrate various grades of mitral stenosis. These ranged from early stages affecting a boy of twelve years and a girl of fourteen years, through middle stages in adult life, accompanied by regular rhythm. Types illustrating late stages in association with auricular fibrillation were also shown. In the earliest case the patient was a boy, aged twelve years. The disorder had been detected by the school medical officer during routine examination. There was a history of untreated "growing pains" occurring two years before coming under observation and extending over a period of six months. The signs of stenosis were well marked.

A girl, aged fourteen years, who had been in hospital on three occasions in four years for rheumatic fever, had not had definite signs of mitral stenosis till four years after the initial attack of rheumatism.

Transposition of Viscera.

Dr. Silberberg also showed a patient affected with complete transposition of viscera. Well marked signs of mitral stenosis were present. No rheumatic or other history of illness had been disclosed. The patient was a male, aged forty years, who had served in the Australian Imperial Force. He stated that the transposition of viscera

was first noted in 1919. There were no symptoms of cardiac distress. The apex beat of the heart was in the fifth right interspace, 11·25 centimetres (four and a half inches) from the mid-line. There was left cardiac dulness to 1·25 centimetres (half an inch) from the left border of the sternum. A presystolic thrill was present at the apical region, in association with a rough crescendo presystolic bruit and slapping first sound. The pulmonary second sound was accentuated. The electrocardiograms showed the signs typical of dextrocardia (inversion of all complexes in Lead I, Leads II and III being normal). The liver dulness was on the left side, and stomach resonance on the right.

Polycystic Kidneys.

DR. WALTER SUMMONS showed a male patient, aged twenty-three years, who had suffered from attacks of pain in the back for eighteen months prior to admission to hospital on July 2, 1932, for pyelitis. It was found on examination that there were large rounded masses in the abdomen, extending half way from the costal margins to the umbilicus. These were moderately firm and had a nodular contour. The blood urea content was 34 milligrammes per 100 cubic centimetres of blood, and the kidneys concentrated the urea to 1·4% and 1·5% one and two hours respectively after a urea test meal. Direct X ray examination of the renal tract showed indefinite shadows but no calculi. It was not considered advisable to do a pyelogram.

In the mother's family history three aunts, one uncle, and one cousin suffered from polycystic disease of the kidneys.

Peripheral Neuritis.

Dr. Summons's next patient was a male, aged thirty-eight years, who had been sent to Hospital on July 27 by Dr. Prouse, of Werribee, who had examined the patient six or seven weeks previously and had found no evidence of organic disease, though the patient had complained of weakness in the hands and legs. Previously he had had an infected finger, which had healed with some limitation of movement. The patient went for a holiday, but returned worse; examination then revealed great muscular weakness, but no wasting of the muscles. He got up from the recumbent to the upright posture like a person suffering from profound myopathy. He stated that he had tired easily for the last two years, and he walked with the legs far apart.

The tendon jerks were absent from both legs and were greatly diminished in the arms. The plantar reflexes were flexor. Sensation to light touch, pin-prick, heat and cold was normal. The vibration sense was greatly diminished. The left calf muscles responded well to a weak Faradic current, and to galvanism responded well to both cathode and anode.

The family history was good. There was no reaction to the Wassermann test. There was no history of any poisoning. The patient was a total abstainer from alcohol. Dr. Summons remarked that the interest in the case lay in the absence of apparent cause and the selection of the motor system. The patient's condition was improving.

Addison's Disease.

Dr. Summons's last patient was a woman, aged fifty-seven years, who had attended the Alfred Hospital first on August 29, 1930, for headaches, vertigo and loss of weight. No organic disease had been detected and the blood pressure had been recorded as (systolic) 146 and (diastolic) 90 millimetres of mercury. She next attended the hospital in August, 1932, complaining of nausea, asthenia, vomiting and diarrhœa. She had lost 12·6 kilograms (two stone) in weight in the previous twelve months, and the symptoms had been present on and off during this period. There was marked brown pigmentation of the skin, especially of the exposed surfaces. Also there were patches of buccal pigmentation. Examination of the heart and lungs revealed no evidence of disease. The systolic blood pressure was 116 millimetres of mercury; it was difficult to be sure of the diastolic pressure. The abdomen was flaccid and empty; there was no tenderness or swelling. No organic lesion was discovered in stomach or duodenum by X ray examination, and the gall-bladder filled normally.

The patient fainted in the out-patient department and was admitted to hospital on August 29, 1932. While indoors her systolic blood pressure ranged from 100 to 114 millimetres of mercury. On August 31, 1932, the fasting blood sugar content was 0·14%. On September 14, 1932, the fasting blood sugar content was 0·05%; half an hour after the administration of fifty grammes of glucose it was 0·08%, and half an hour later 0·10%. The blood film and differential cell count were normal.

Treatment with "Eschatin" (Parke, Davis and Company) was started on September 8, and two cubic centimetres were injected intramuscularly every fourth day thereafter. Six injections had been given with no apparent alteration of the systolic blood pressure. The patient stated that she felt better, but she had been kept in bed and the gastro-intestinal symptoms had disappeared.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Corlis, Wilson Leighton, M.B., 1931 (Univ. Sydney), Coast Hospital, Little Bay.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Ratten, Kenneth Ernest, M.B., B.S., 1932 (Univ. Melbourne), Melbourne Hospital, Melbourne, C.1.

Hill, Arthur Machen, M.B., B.S., 1927 (Univ. Melbourne), M.D., Women's Hospital, Carlton, N.3.

Rabinov, Louis, M.B., B.S., 1927 (Univ. Melbourne), 388, Lower Malvern Road, Malvern, S.E.6.

Post-Graduate Work.

ANNUAL POST-GRADUATE COURSE IN BRISBANE.

THE annual post-graduate course will be held in Brisbane from May 29 to June 2, 1933.

Invitations have been accepted by Dr. Archie Aspinall, Dr. Edgar Stephen and Dr. W. K. Inglis, of Sydney, to give lectures or demonstrations on various subjects during the course.

Professor Harvey Sutton, of Sydney, will deliver the Joseph Bancroft Memorial Lecture on June 2 and will also give a lecture to members of the course.

A detailed syllabus of the course will be published later. Those intending to join are asked to notify the Honorary Secretary of the Post-Graduate Committee, Dr. L. W. N. Gibson, British Medical Association Building, 35, Adelaide Street, Brisbane, and to state whether or not they will be accompanied by their wives. The fee for the course is £2 2s.

Correspondence.

THE NEW SOUTH WALES MEDICAL BOARD.

SIR: In view of the widespread dissatisfaction which obviously exists in the minds of many members of the medical profession in regard to the discourteous dismissal of the members of the late Medical Board, I have been requested by the Council of the New South Wales Branch of the British Medical Association to ask you to publish the following statement:

When the Council became aware of the facts, it immediately called a special meeting to consider the situation. It was unanimously resolved that a letter should be sent to the Government protesting strongly

against the manner in which the Medical Board had been dismissed and asking that a deputation be received.

In the letter the following paragraph appeared:

> The members of the recently dismissed Board were without exception distinguished medical men. They have rendered valuable service to the State. A very serious reflection has been cast over these gentlemen by the discourteous and peremptory manner in which the Honourable the Minister for Health has dealt with them, and the prestige of the Board has been damaged in the eyes of the public.

The Council next considered the advisability of agreeing to the suggestion of two of its members, appointed to the new Board, that they should resign. After full consideration the Council was completely satisfied that they had accepted these positions in all good faith. After earnest consideration of all the facts it was decided that in the best interests of the community it would not be advisable to call upon the members of the new Medical Board to resign.

Subsequently the request for a deputation was granted, and during the course of the meeting the strongest possible protest was made against the Minister's discourteous action towards the old Board and the Government was requested to take the necessary steps to prevent a repetition of such an action in the future.

Yours, etc.,

J. G. Hunter,

Medical Secretary.

British Medical Association House,
135, Macquarie Street,
Sydney,
March 30, 1933.

Diary for the Month.

Apr. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Apr. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
Apr. 19.—Western Australian Branch, B.M.A.: Branch.
Apr. 20.—New South Wales Branch, B.M.A.: Clinical Meeting.
Apr. 21.—Queensland Branch, B.M.A.: Council.
Apr. 27.—South Australian Branch, B.M.A.: Branch.
Apr. 27.—New South Wales Branch, B.M.A.: Branch.
May 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
May 3.—Western Australian Branch, B.M.A.: Council.
May 3.—Victorian Branch, B.M.A.: Branch.
May 4.—South Australian Branch, B.M.A.: Council.
May 5.—Queensland Branch, B.M.A.: Branch.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xv, xvi, xvii.

Alfred Hospital, Melbourne, Victoria: Officer-in-Charge of General Clinic.
Broken Hill and District Hospital, New South Wales: Surgeon Superintendent, Junior Resident Medical Officer.
Gresswell Sanatorium, Mont Park, Victoria: Resident Medical Officer.
Hobart Public Hospital, Hobart, Tasmania: Junior Resident Medical Officer.
Infectious Diseases Hospital, Fairfield, Victoria: Junior Resident Medical Officer (male).
Mater Misericordiæ Children's Hospital, Brisbane, Queensland: Resident Medical Officer.
Royal Prince Alfred Hospital, Sydney, New South Wales: Medical Superintendent.
Saint Vincent's Hospital, Sydney, New South Wales: Honorary Officers.
Sydney Hospital, Sydney, New South Wales: Honorary Officers.
Wangaratta District Hospital, Victoria: Resident Surgeon.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Toowoomba Associated Friendly Societies' Medical Institute. Chilliagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
South Australian: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to "The Editor", The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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